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Route 1 Multimodal Improvements Study

Future No-Build Conditions Summary

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Future No-Build Conditions Summary

1. Introduction

This memorandum summarizes future No-Build conditions for the Route 1 Multimodal Improvements study across all modes – pedestrians, bicycles, transit, and vehicles. This analysis builds upon the Existing (2019) conditions summarized in a previous memorandum. It describes approved and funded changes to the transportation network and land use in the study area for the future 2025 and 2040 analysis years. Next, it describes the forecasted changes to AM and PM peak hour traffic volumes for pedestrians, bicycles, and vehicles. Finally, the modeled multimodal traffic operations are summarized across all modes. These operations will be used in future analyses to compare with multimodal traffic measures of effectiveness (MOEs) from proposed Build improvement concepts.

2. Future Land Use and Background Transportation Improvements

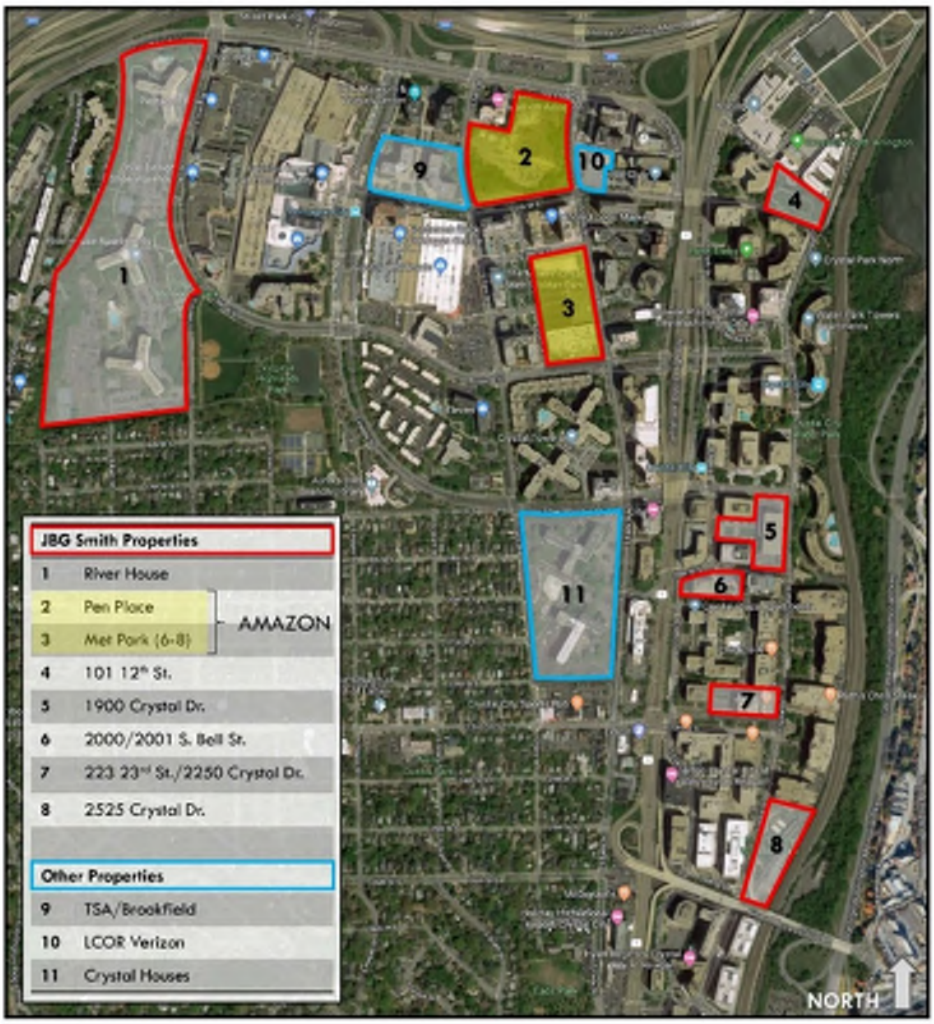
Full details on background land use and transportation improvements are provided in the **Route 1 Travel Forecast Summary Memorandum** in **Appendix A**.

2.1. LAND USE FORECASTS AND BACKGROUND DEVELOPMENTS

Arlington County Department of Community Planning, Housing and Development (CPHD) staff provided modified land use forecasts as inputs to the MWCOG model for future analysis years. The land use forecasts for the Route 1 Multimodal study match the baseline land use from the County PDSP study for the 2025 and 2040 analysis years. These represent the latest development forecasts from the County, including the Route 1 study area. **Table 2-1** summarizes the forecasted total population and employment in the study area. As shown, total employment in the study area is forecasted to more than double by 2040, while total population is forecasted to increase by nearly 50 percent. These projections account for the developments shown in **Figure 2-1** (provided by Arlington County).

Table 2-1: Population and Employment Projections in Route 1 Study Area (Modified Round 9.1a Forecasts)

MWCOG Zone	2021		2025		2040	
	Pop	Emp	Pop	Emp	Pop	Emp
1493	2,279	5,563	2,604	11,414	2,604	25,881
1499	539	7,505	539	9,186	648	10,579
1500	2,606	574	2,963	534	3,684	534
1501	3,611	22,408	4,232	24,118	7,755	37,537
1502	3,465	1,528	4,396	1,608	4,849	1,623
1503	553	121	576	115	588	116
1504	1,335	303	1,020	304	1,020	307
Total	**14,388**	**38,002**	**16,330**	**47,279**	**21,148**	**76,577**
	52,390		**63,609**		**97,725**	
Percent Change from Existing	-	-	**13%**	**24%**	**47%**	**102%**
	-		**21%**		**87%**	
Growth Rate (Linear)	-	-	**3.4%**	**6.1%**	**2.0%**	**4.1%**
	-		**5.35%**		**3.58%**	



		PROPOSED/ANTICIPATED GFA	PUBLIC HEARINGS SCHEDULE
APPROVED APPLICATIONS			
3	Met Park 6-8	2,000,000 SF of office; 100,000 SF of retail	PC/CB December 2019 (Approved)
5	1900 Crystal Drive	786,000 SF of residential	PC/CB Mar 2020 (Approved)
10	LCOR Verizon	272,000 SF of residential; 11,000 SF of retail	PC/CB October 2019 (Approved)
11	Crystal Houses	436,000 SF of residential	PC/CB December 2019 (Approved)
FINAL APPLICATIONS			
4	101 12th Street	250,000 SF of office	PC/CB Fall 2020
6	2000/2001 S. Bell Street	750,000 SF of residential	TBD/Early 2021
7	223 23rd Street/2250 Crystal Drive	490,000 SF of residential; 500,000 SF of office	TBD/Early 2021
PRELIMINARY APPLICATIONS			
1	River House	1,595,000 SF of residential	
8	2525 Crystal Drive	800,000 SF of residential	
CONCEPT APPLICATIONS			
9	TSA/Brookfield	1,487,000 SF of office/residential/hotel/retail	
ANTICIPATED APPLICATIONS			
2	Pen Place	2,000,000 million SF of office; retail TBD	
TOTAL ANTICIPATED DENSITY		**11,500,000 SF (APPROXIMATELY)**	

Source: Arlington County Department of Community Planning, Housing, and Development (CPHD)

Figure 2-1: Planned and Approved Developments in Study Area

2.2. BACKGROUND TRANSPORTATION NETWORK IMPROVEMENTS

Arlington County verified several planned transportation projects to modify or improve the street network and transit operations within the PDSP study area for future analysis years. **Table 2-2** shows these projects, which are included in the MWCOG, Visum, and Vissim models provided by Arlington County (where applicable).

Note that for 2040 No-Build conditions for this study, additional improvements were included at the intersection clusters of Route 1 / 20th Street S / S Clark Street and Route 1 / 23rd Street S / S Clark Street that are included in the Crystal City Sector Plan. These improvements include relocating S Clark Street further to the east away from Route 1 and converting S Clark Street to two-way operations. Given this realignment, the approach laneage, timings, and phasing at the Route 1 / 20th Street S and Route 1 / 23rd Street S signals can be modified and re-optimized.

Table 2-2: Background Transportation Network Improvements

Project Name	Project Description (Within Route 1 Study Area)	Model Year		Included in Arlington County PDSP Models?
		2025	2040	
Army Navy Drive Complete Street	• Repurpose travel lanes as dedicated bus lanes • Repurpose travel lanes to accommodate protected bike lanes	✓	✓	Yes
12th Street S Complete Street / Transitway Segment II	• Repurpose travel lanes as dedicated bus lanes • Add new traffic signal at Army Navy Drive & 12th Street S • Additional pedestrian and bicycle accommodations	✓	✓	Yes
Transitway Segments I, III, and IV	• Repurpose travel lanes as dedicated bus lanes • Add new traffic signal at 12th Street S & S Elm Street • Extend WMATA Metroway service along segments of Crystal Drive, 12th Street S, S Hayes Street, Army Navy Drive, S Clark Street, and S Bell Street • Signal phasing modifications to accommodate protected bus movements	✓	✓	Yes
18th Street S Complete Street	• Modify lane configuration to shorten pedestrian crossings and extend protected bike lane buffers closer to the intersections • Modify signal at 18th Street S & S Fern Street	✓	✓	Yes
Met Park Traffic Signal Additions and Modifications	• Modify signal at 15th Street S & S Eads Street • Add new signal at S Eads Street & 13th Street S • Add new signal at S Eads Street & 14th Street S • Add new signal at 15th Street S & S Elm Street	✓	✓	Yes
15th Street S Re-Alignment	• Add new signal at 15th Street S & Clark Street/Bell Street		✓	Yes
20th Street S Re-Alignment	• Modify lane configuration per the Crystal City Sector Plan	✓	✓	Yes
20th Street S / Route 1 / S Clark Street Intersection Cluster Re-Alignment	Note: improvements from Crystal City Sector Plan identified by VDOT as desired to be included in Route 1 No-Build conditions • Relocate S Clark Street to east to tie in to 20th Street S directly across from S Bell Street • Convert S Clark Street from one-way to two-way • Realign Route 1 / 20th Street S intersection to orient the EB and WB approaches directly across from each other and adjust phasing and timings accordingly		✓	No
23rd Street S Re-Alignment	• Adjust EB/WB phasing at Route 1 & 23rd Street S to include protected/permitted left turn movements • Minor adjustments to 23rd Street S & S Eads Street phasing and timing	✓	✓	Yes

Project Name	Project Description (Within Route 1 Study Area)	Model Year		Included in Arlington County PDSP Models?
		2025	2040	
23rd Street S / Route 1 / S Clark Street Intersection Cluster Re-Alignment	Note: improvements from Crystal City Sector Plan identified by VDOT as desired to be included in Route 1 No-Build conditions • Relocate S Clark Street to east to tie in to 23rd Street S further to the east • Convert S Clark St from one-way to two-way • Adjust phasing and timing at Route 1 / 23rd Street S intersection to eliminate dedicated phases for S Clark St access		✓	No

3. Future Conditions Multimodal Traffic Forecasting

Future vehicular traffic volumes for the Route 1 Multimodal Improvements study for 2025 and 2040 No-Build conditions will align with Arlington County's PDSP study 2025 and 2040 baseline traffic forecasts, respectively. These traffic volumes were developed by the County using their own modeling process (which was validated for this study) for the respective future analysis years. Forecasts for non-vehicular modes (bicycles and pedestrians) were developed utilizing existing bicycle and pedestrian counts and adjusting these using the growth rates for the total population and employment in the MWCOG zones in the Pentagon City and Crystal City areas as shown in **Table 2-1**. Full details on the multimodal travel modeling and forecasting process are provided in the **Route 1 Travel Forecast Summary Memorandum** in **Appendix A.** This memorandum includes a detailed discussion of validation checks conducted on the County's modeling process, mode choice assumptions, historic traffic counts in the study area, and observations on major changes in traffic volumes between existing (2019) conditions and 2025/2040 conditions.

Notably, total vehicular trips in the Route 1 study area[1] are forecasted to increase by 28 percent during the AM peak hour and by 36 percent during the PM peak hour by 2040. This growth is largely driven by trips in which the starting and/or end points of the trip are internal to the study area, rather than through trips (such as north/south through trips along Route 1). Growth at various locations along the Route 1 corridor generally aligns with these trends. Note that forecasted traffic growth along the Route 1 corridor by 2025 is much less significant and generally within 10 percent of existing volumes at most locations; the more substantial growth out to 2040 generally reflects the population and employment trends shown in **Table 2-1.**

The representative weekday AM and PM peak hour vehicular traffic volumes for 2025 No-Build conditions are provided in **Figure 3-1** and **Figure 3-2**, respectively.

The representative weekday AM and PM peak hour vehicular traffic volumes for 2040 No-Build conditions are provided in **Figure 3-3** and **Figure 3-4**, respectively.

The representative weekday peak hour forecasted pedestrian volumes are provided for 2025 No-Build conditions in **Figure 3-5** and for 2040 No-Build conditions in **Figure 3-6**.

[1] Total trip demand from Arlington County's PDSP forecast models – see Table 9 and Table 10 in **Appendix A.**

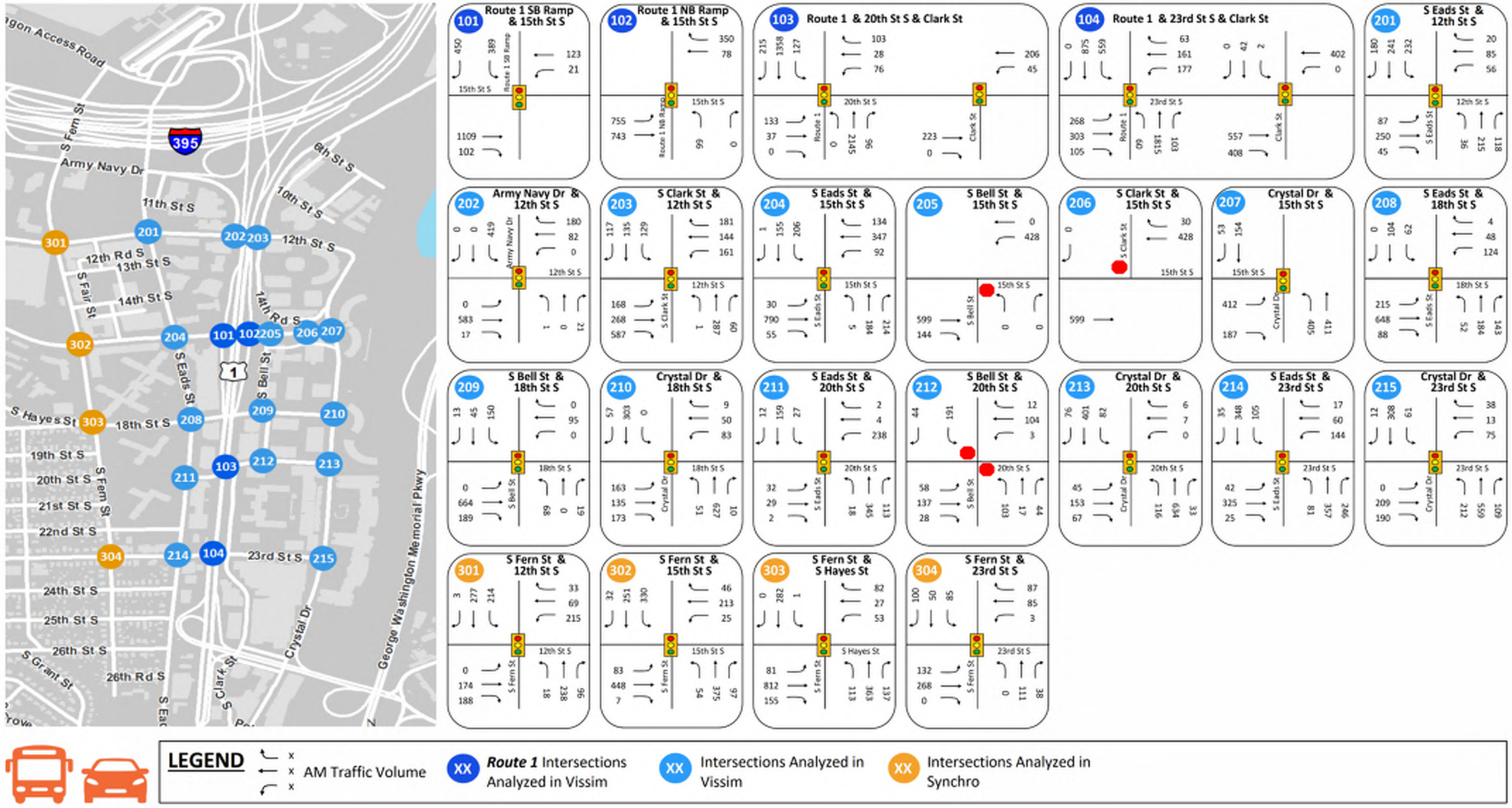


Figure 3-1: 2025 No-Build AM Peak Hour Vehicle Turning Movement Forecasts

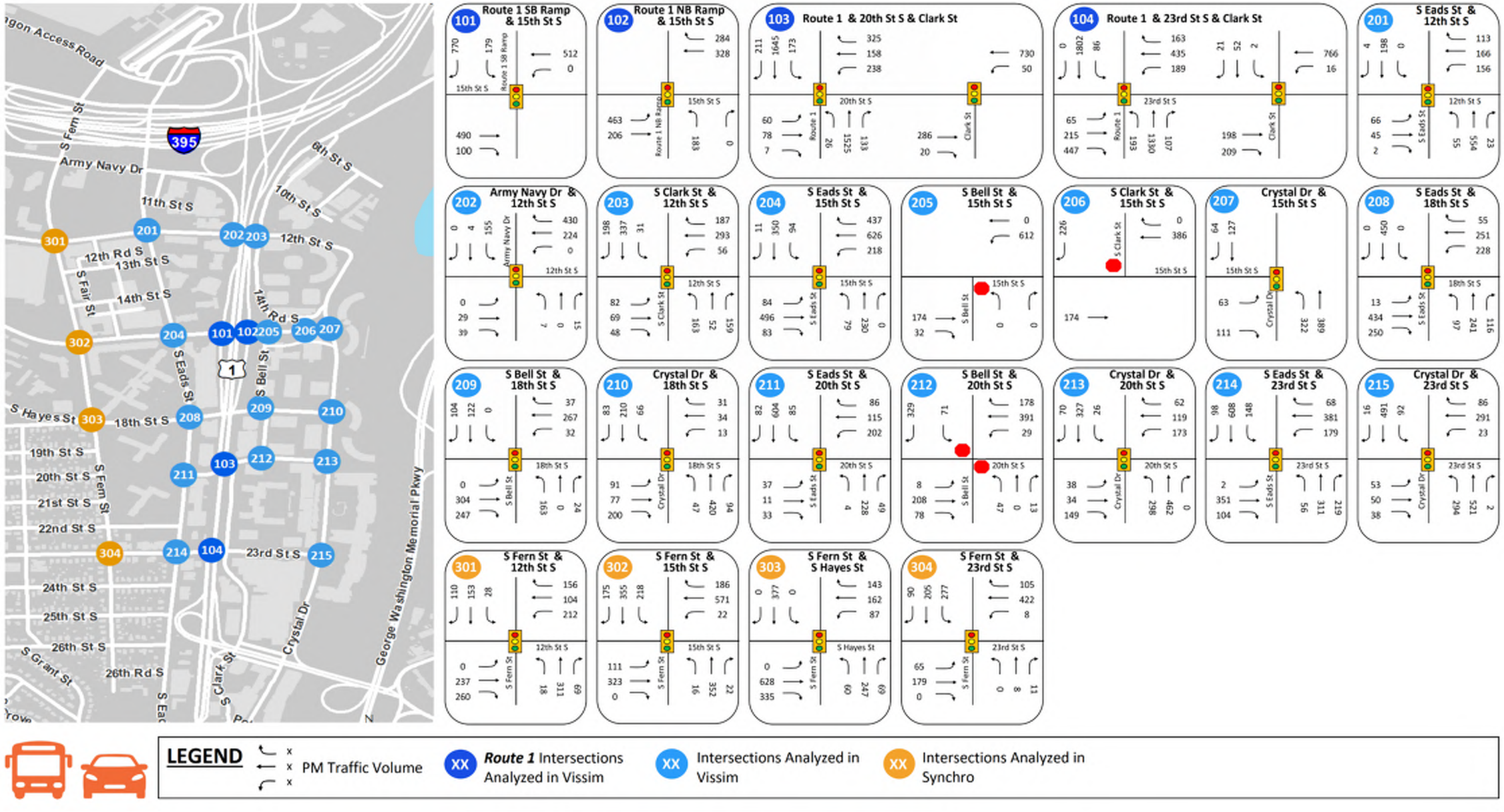


Figure 3-2: 2025 No-Build PM Peak Hour Vehicle Turning Movement Forecasts

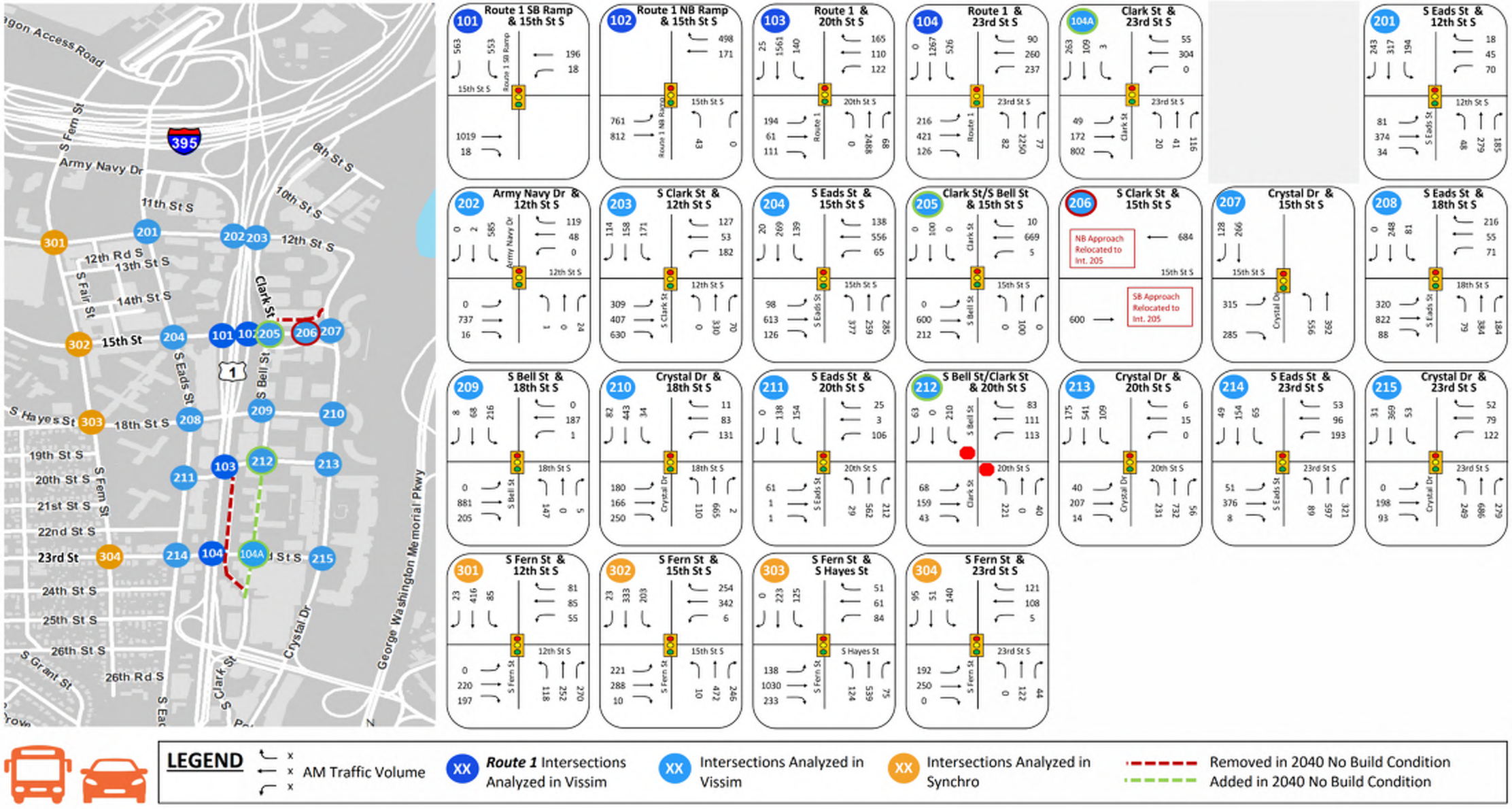


Figure 3-3: 2040 No-Build AM Peak Hour Vehicle Turning Movement Forecasts

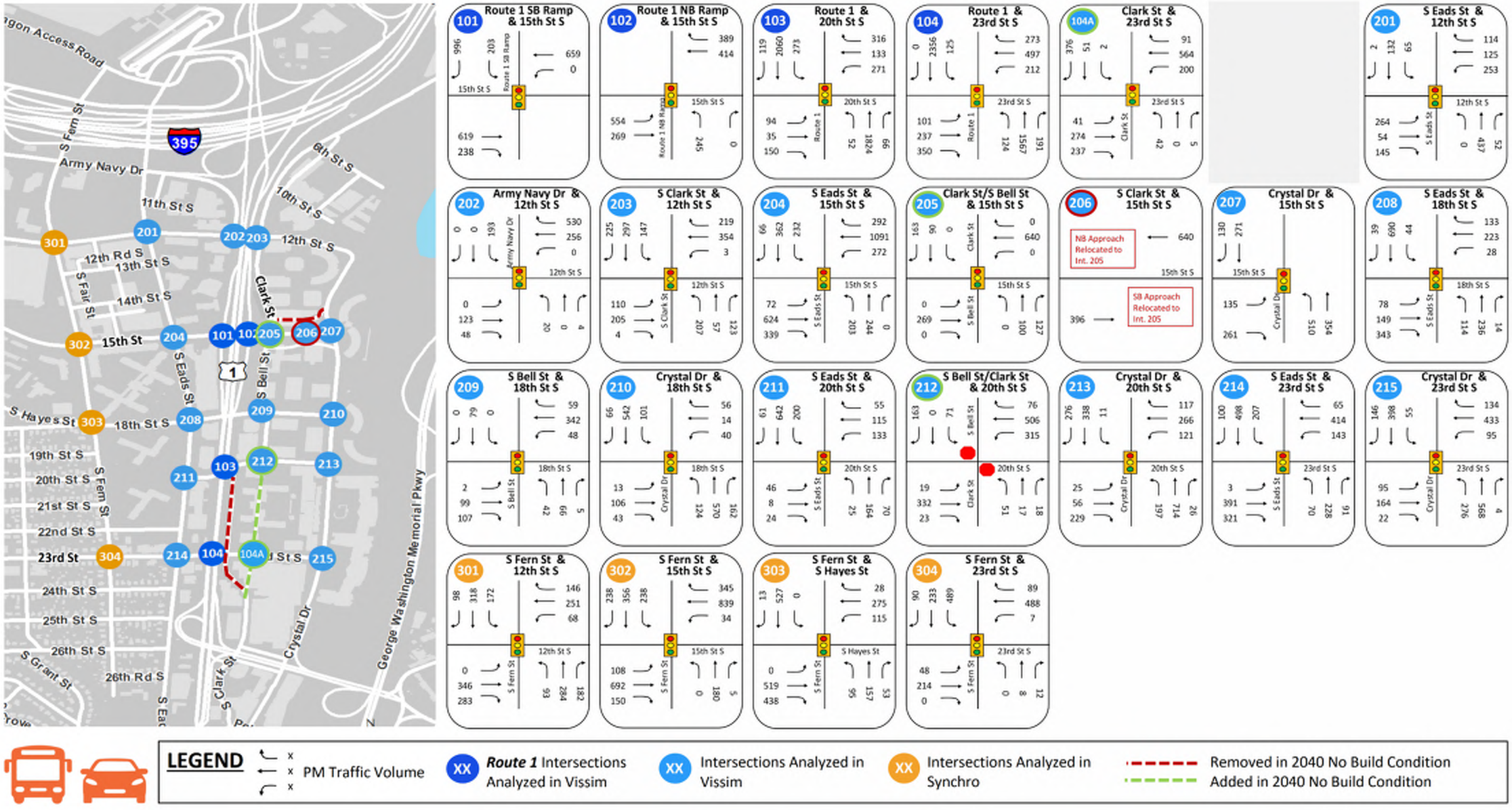


Figure 3-4: 2040 No-Build PM Peak Hour Vehicle Turning Movement Forecasts

Figure 3-5: 2025 No-Build Peak Hour Pedestrian Forecasts at Core Study Area Intersections

Figure 3-6: 2040 No-Build Peak Hour Pedestrian Forecasts at Core Study Area Intersections

4. Future No-Build Conditions

4.1. 2025 AND 2040 NO-BUILD MULTIMODAL TRAFFIC CONDITIONS

This section summarizes the future 2025 and 2040 No-Build conditions operations across all modes of traffic in the study area – pedestrians, bicyclists, transit, and vehicles. Many of the MOEs for each mode are derived from a Vissim microsimulation model of the study area, consistent with the analysis of existing conditions. Within the body of this report, several key MOEs are compared for existing and No-Build conditions to understand general trends. Detailed MOEs from the Vissim models can be found in the following Appendices:

- **Appendix B** – AM Existing and No-Build Models Comparison
- **Appendix C** – PM Existing and No-Build Models Comparison
- **Appendix D** – AM Individual Vissim Intersection Results
- **Appendix E** – PM Individual Vissim Intersection Results
- **Appendix F** – Synchro Results (Fern Street Intersections)

4.1.1. 2025 and 2040 No-Build Vehicular Traffic Operations

Traffic operations analyses were conducted to identify the future performance of the Route 1 corridor and study area intersections under the No-Build traffic conditions. Consistent with existing conditions, vehicular traffic was analyzed using Synchro 10 and Vissim 11 for the study area limits. Vissim was also used to model pedestrian, bicycle, and transit within the network to capture the multimodal interactions.

The Vissim and Synchro models incorporated all background projects noted in **Table 2-2**. Signal timings throughout the study area were re-optimized where applicable. In most locations, the future No-Build signal timings were incorporated directly from the 2025/2040 draft Vissim models[2] from the Arlington County PDSP study. Note the 2040 planned improvements to the Route 1 / 20th Street S / S Clark Street and Route 1 / 23rd Street S / S Clark Street intersection clusters provided for in the Crystal City Sector Plan allow for significant changes to signal timing and phasing at these locations.

Intersection Performance (Delay, LOS, and Queues)

The AM peak hour HCM-analogous LOS and microsimulation delay for the Vissim Operational Analysis Area are reported for 2025 in **Figure 4-1** and for 2040 in **Figure 4-2**. The PM peak hour HCM-analogous LOS and microsimulation delay are reported for 2025 in **Figure 4-3** and for 2040 in **Figure 4-4**. Note that detailed outputs for intersections modeled in Synchro can be found in **Appendix F**.

[2] Draft in-progress Vissim models were provided by Arlington County in November 2020 for the PDSP study 2025/2040 baseline scenarios. These models have been used as the starting point for transportation network improvements and signal timings in the Route 1 Multimodal Study future Vissim models.

The following sections discuss major operational issues identified at study area intersections, focused on the Core Street Study Area intersections. Notable changes from existing conditions are included.

2025 No-Build AM Peak Hour Operational Issues

Route 1 and 15th Street S (Interchange Ramp Signals)

- Similar to existing conditions, heavy eastbound demand for the left turn onto the northbound Route 1 ramp (more than 750 vph) creates queue spillback along 15th Street S through the intersection with the southbound Route 1 ramps. While the eastbound approach movements operate at an acceptable LOS at both intersections, maximum queues for the eastbound left turn spill out of the turn bay west of the intersection with the southbound ramps.
- Given adjustments to signal timings, all individual movements operate at LOS C or better at both intersections at the interchange, and overall intersection delay and LOS at both intersections improve slightly as compared to existing conditions.
- Immediately to the west at S Eads Street, this intersection sees a deterioration from LOS B in existing conditions to LOS D in 2025 No-Build conditions. This is generally attributable to higher eastbound/westbound through movements and occasional queue spillback from the eastbound left turns at the Route 1 interchange.

18th Street S Underpass at Route 1

- The intersections of 18th Street S with S Eads Street and S Bell Street operate at LOS C and B, respectively. Queues and delays are acceptable at both intersections, with slightly higher demand and delay as compared to existing conditions.

Route 1 and 20th Street S/S Clark Street Intersection Cluster

- Given adjustments to signal timing and fairly consistent demand as compared to existing conditions, this intersection cluster sees a slight improvement in operations as compared to existing conditions. The eastbound left turn remains at LOS F, and the westbound right turn degrades to LOS F. The eastbound approach overall degrades to LOS F (from E), and the westbound approach degrades to LOS E (from D). These deteriorations in operations for the side streets do not spill back and affect the upstream intersections at S Eads Street and S Bell Street.

Route 1 and 23rd Street S/S Eads Street/S Clark Street Intersection Cluster

- Given adjustments to signal timing, planned improvements along 23rd Street S by Arlington County, and fairly consistent demand as compared to existing conditions, this intersection cluster sees an improvement as compared to existing conditions. The overall intersection improves from LOS F (141 s average delay) to LOS E (59 s average delay), made possible by a significant reduction in delay for the northbound through movement (210 s in existing conditions to 72 s in 2025 No-Build), which is by far the heaviest movement at this intersection in the AM peak hour. An increase in green time for the northbound/southbound through movement results in a significant improvement in

the number of vehicles being able to pass through the intersection in a single cycle, which has a significant impact on average delay and travel times.

- The delays at the Route 1/23rd intersection affect the intersection of 23rd Street S/S Eads Street. Failing operations are observed for the eastbound approach and northbound right turn movement due to spillback from the Route 1 traffic signal. The overall intersection LOS F represents a degradation from LOS E in existing conditions, although the eastbound 23rd Street S approach sees very high delay in both scenarios.

Other Notable Intersections

- The newly signalized intersection of 12th Street S and Army Navy Drive is operating at LOS F due to significant delay for the southbound left turn movement off of Army Navy Drive. This movement sees a significant increase in demand as compared to existing conditions as well as a reconfiguration of the lane geometry due to background multimodal improvements planned by Arlington County. Operations at this intersection are not observed to influence the Route 1 study area.

2040 No-Build AM Peak Hour Operational Issues

Route 1 and 15th Street S (Interchange Ramp Signals)

- Similar to existing and 2025 No-Build conditions, heavy eastbound demand for the left turn onto the northbound Route 1 ramp (more than 750 vph) creates queue spillback along 15th Street S through the intersection with the southbound Route 1 ramps. While the eastbound approach movements operate at an acceptable LOS at both intersections, maximum queues for the eastbound left turn spill out of the turn bay west of the intersection with the southbound ramps.
- Both interchange ramp signals operate at an acceptable LOS (C for the intersection with the southbound ramps and D for the intersection with the northbound ramps); the only movements operating at LOS D or worse are the heavy eastbound left turn onto the northbound Route 1 on-ramp (44 s delay) and the heavy southbound left turn from the Route 1 off-ramp (more than 550 vph demand; 59 s delay).
- Immediately to the west at S Eads Street, this intersection continues to see a deterioration from LOS B in existing conditions to LOS D in 2040 No-Build conditions. This is generally attributable to higher eastbound/westbound through movements and occasional queue spillback from the eastbound left turns at the interchange.
- In 2040 No-Build conditions, a new traffic signal is also present immediately to the east of the interchange at 15th Street S and S Bell Street. This intersection operates at LOS B, with acceptable east-west progression along 15th Street through the interchange.

18th Street S Underpass at Route 1

- The intersections of 18th Street S with S Eads Street and S Bell Street operate at LOS D and C, respectively, representing a slight deterioration from 2025 No-Build conditions. Queues and delays are generally acceptable at both intersections, with the most significant demand and delay being for the eastbound 18th Street S approach at S Eads

Street. The heavy left turn movement (approximately 320 vph demand) operates at LOS F, and the heavy through movement (approximately 820 vph demand) operates at LOS E, with maximum eastbound approach queues of over 600 feet, or nearly back to S Fern Street.

Route 1 and 20th Street S/S Clark Street Intersection Cluster

- In 2040 No-Build conditions, it is assumed that improvements from the Crystal City Sector Plan have been provided at this location, and S Clark Street has been relocated to the east to align with S Bell Street. Because of this relocation, the intersection of Route 1 and 20th Street S can be realigned to operate as a 4-legged intersection with standard signal phasing. Thus, despite increased demand as compared to existing and 2025 No-Build conditions, the Route 1/20th intersection operates at LOS C, with all approaches at LOS D or better and no individual movements below LOS E.
- The reconfigured, unsignalized intersection of 20th Street S and S Bell/Clark Street operates at LOS B, with acceptable queueing and delay for all movements.

Route 1 and 23rd Street S/S Eads Street/S Clark Street Intersection Cluster

- In 2040 No-Build conditions, similar to the improvements at 20th Street S, it is assumed that improvements from the Crystal City Sector Plan have been provided at this location, and S Clark Street has been relocated to the east. Because of this relocation, the intersection of Route 1 and 23rd Street S can be realigned to operate as a 4-legged intersection with standard signal phasing. Despite this improvement, the new intersection of Route 1/23rd Street S operates at LOS F during the AM peak period due to heavy forecasted demand, most notably for the northbound approach and southbound left turn, which are each individually operating at LOS F with significant queueing and delay. Maximum queue lengths for the northbound approach are more than 1,800 feet in length (comparable to existing conditions), and maximum queues for the southbound left turn spill out of the available storage. Both of these issues are attributable to very heavy forecasted vehicular demand.
- The delays at the Route 1/23rd intersection affect the intersection of 23rd Street S/S Eads Street. Similar to 2025 No-Build conditions, failing operations are observed for the eastbound approach and northbound right turn movement due to spillback from the Route 1 traffic signal.
- The new signalized intersection of 23rd Street S and S Clark Street operates with an acceptable delay/LOS (LOS B).

Other Notable Intersections

- The planned signalized intersection of 12th Street S and Army Navy Drive is operating at LOS F, similar to 2025 No-Build conditions, due to significant delay for the southbound left turn movement off of Army Navy Drive. This movement sees a significant increase in demand as compared to existing conditions as well as a reconfiguration of the lane geometry due to background multimodal improvements planned by Arlington County. Operations at this intersection are not observed to influence the Route 1 study area.

- Along S Fern Street (modeled in Synchro), significant delay is observed for the northbound and eastbound approaches at the intersection with S Hayes St / 18th Street S. This increase in delay is attributable to increased demand, especially along S Fern Street, as well as multimodal improvements planned by Arlington County that reduce the number of approach lanes, including elimination of the eastbound and westbound left turn bays.

2025 No-Build PM Peak Hour Operational Issues

Route 1 and 15th Street S (Interchange Ramp Signals)

- Overall intersection delay and LOS at both intersections is consistent in 2025 No-Build conditions with existing conditions. Both intersections are operating acceptably, with the intersection at the southbound ramps operating at LOS C and the intersection at the northbound ramps operating at LOS B.
- A few individual movements are operating at LOS D, including the southbound left turn movement from the southbound off-ramp. This delay is affected by the corresponding heavy southbound right turn movement, for which it shares a center lane (demand of 770 vph). However, queues for this ramp are contained within the available ramp storage.

18th Street S Underpass at Route 1

- The intersections of 18th Street S with S Eads Street and S Bell Street both operate at LOS C. The only individual movement at LOS E is the westbound left turn at S Eads Street, with a demand of greater than 200 vph but no dedicated protected left-turn phase.

Route 1 and 20th Street S/S Clark Street Intersection Cluster

- The intersection cluster at Route 1/20th Street S/S Clark Street operates at overall LOS C, with very comparable overall delay to existing conditions. The eastbound 20th Street S approach degrades from LOS D in existing conditions to LOS F.

Route 1 and 23rd Street S/S Eads Street/S Clark Street Intersection Cluster

- The intersection cluster at Route 1/23rd Street S/S Clark Street operates at overall LOS C, with a slight reduction in overall delay as compared to existing conditions. Several individual movements are operating at LOS E or F, however. Notably, the northbound left turn movement from Route 1 sees maximum queues that exceed the storage of the turn bay.

Other Notable Intersections

- In 2025 No-Build PM conditions, all study area intersections outside the Core Street Study area are observed to be operating at LOS E or better, including signalized intersections along S Fern Street (modeled in Synchro).

2040 No-Build PM Peak Hour Operational Issues

Route 1 and 15th Street S (Interchange Ramp Signals)

- Similar to 2025 PM, overall intersection delay and LOS at both intersections is consistent in 2040 No-Build conditions with existing conditions. Both intersections are operating acceptably, with the intersection at the southbound ramps operating at LOS C and the intersection at the northbound ramps operating at LOS B.
- A few individual movements are operating at LOS D, including the southbound left turn movement from the southbound off-ramp. This delay is affected by the corresponding heavy southbound right turn movement, for which it shares a center lane (demand of nearly 1,000 vph for the right turn movement). However, queues for this ramp are contained within the available ramp storage.
- Eastbound 15th Street S queues approaching the intersection with the southbound ramps are observed to occasionally spill back to the upstream intersection with S Eads Street. This intersection is operating at LOS D, with both the northbound and southbound approaches at LOS F due to heavy conflicting left turn movements.
- In 2040 No-Build conditions, a new traffic signal is also present immediately to the east of the interchange at 15th Street S and S Bell Street. This intersection operates at LOS E, with fairly significant delay (99 s) for the westbound 15th Street S approach.

18th Street S Underpass at Route 1

- Similar to 2025 PM, the intersections of 18th Street S with S Eads Street and S Bell Street both operate acceptably, with the Bell intersection at LOS B and the Eads intersection at LOS C. No individual movements or approaches operate worse than LOS D.

Route 1 and 20th Street S/S Clark Street Intersection Cluster

- In 2040 No-Build conditions, it is assumed that improvements from the Crystal City Sector Plan have been provided at this location, and Clark Street has been relocated to the east to align with S Bell Street. Because of this relocation, the intersection of Route 1 and 20th Street S can be realigned to operate as a 4-legged intersection with standard signal phasing. Thus, despite increased demand as compared to existing and 2025 No-Build conditions, the Route 1/20th intersection operates at LOS D, with all approaches at LOS E or better. The southbound and eastbound left turn movements are both operating at LOS F.
- Notably, the southbound left turn movement has heavy forecasted demand and is creating queue spillback onto the southbound Route 1 mainline. This queue spillback extends back to the 18th Street S overpass.
- The reconfigured, unsignalized intersection of 20th Street S and S Bell/Clark Street operates at LOS B, with acceptable queueing and delay for all movements.

Route 1 and 23rd Street S/S Eads Street/S Clark Street Intersection Cluster

- In 2040 No-Build conditions, similar to the improvements at 20th Street S, it is assumed that improvements from the Crystal City Sector Plan have been provided at this location,

and Clark Street has been relocated to the east. Because of this relocation, the intersection of Route 1 and 23rd Street S can be realigned to operate as a 4-legged intersection with standard signal phasing. Despite this improvement, the new intersection of Route 1/23rd Street S operates at LOS E during the PM peak period due to heavy forecasted demand, most notably for the northbound and southbound through movements. The northbound approach operates at LOS E with significant queueing and delay. Maximum queue lengths for the northbound approach are nearly 1,100 feet in length (a significant increase as compared to existing and 2025 No-Build conditions), and maximum queues for the southbound left turn spill out of the available storage. Both of these are attributable to very heavy forecasted vehicular demand.

- The new signalized intersection of 23rd Street S and S Clark Street operates with an acceptable delay/LOS, although the southbound approach is operating at LOS E due to heavy projected southbound right turn volumes.

Other Notable Intersections

- Along S Fern Street (modeled in Synchro), the intersections with S Hayes Street/18th Street S and with 23rd Street S are both operating at LOS F due to heavy projected turning movement volumes.

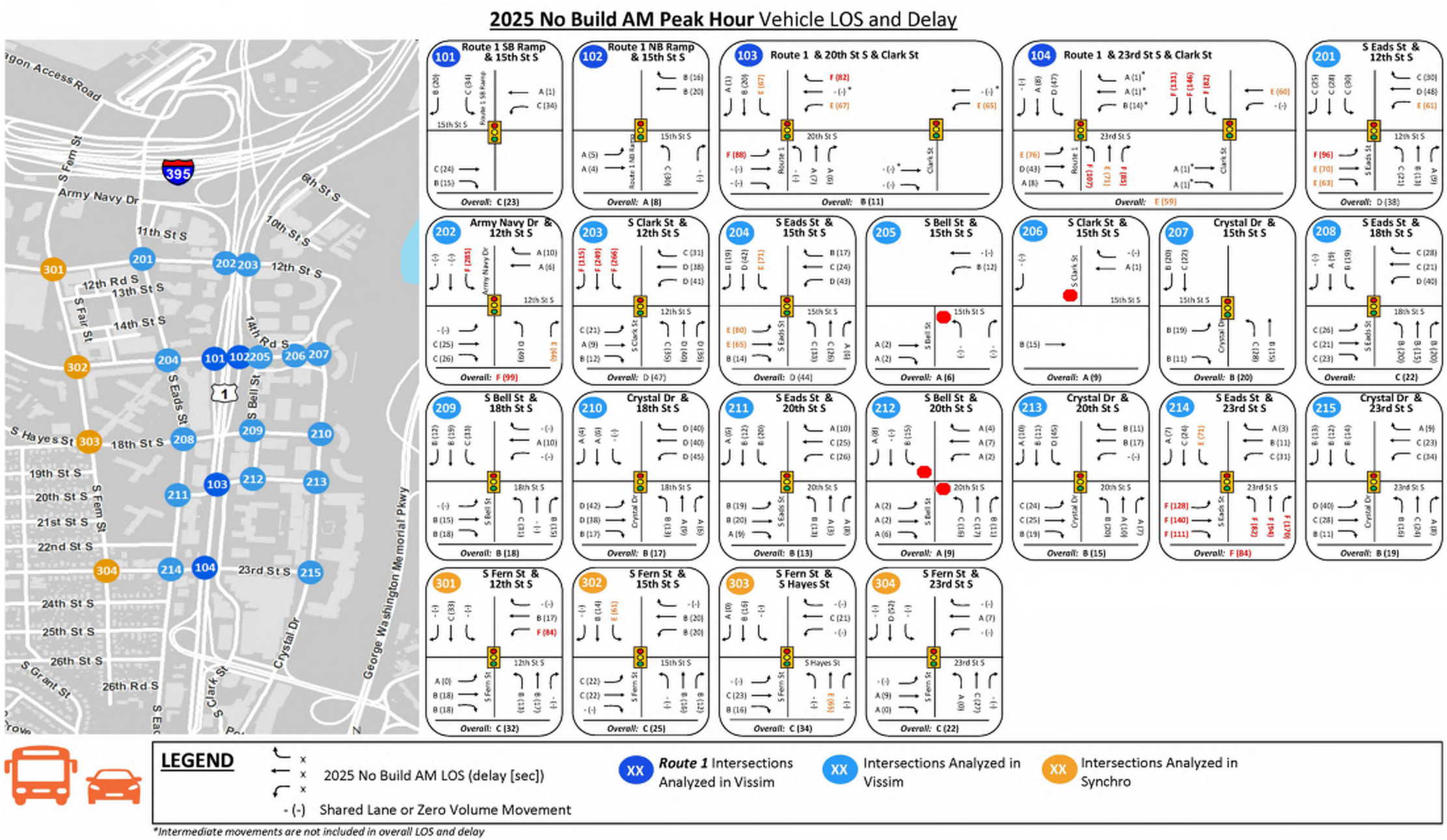


Figure 4-1: 2025 No-Build AM Peak Hour LOS and Delay

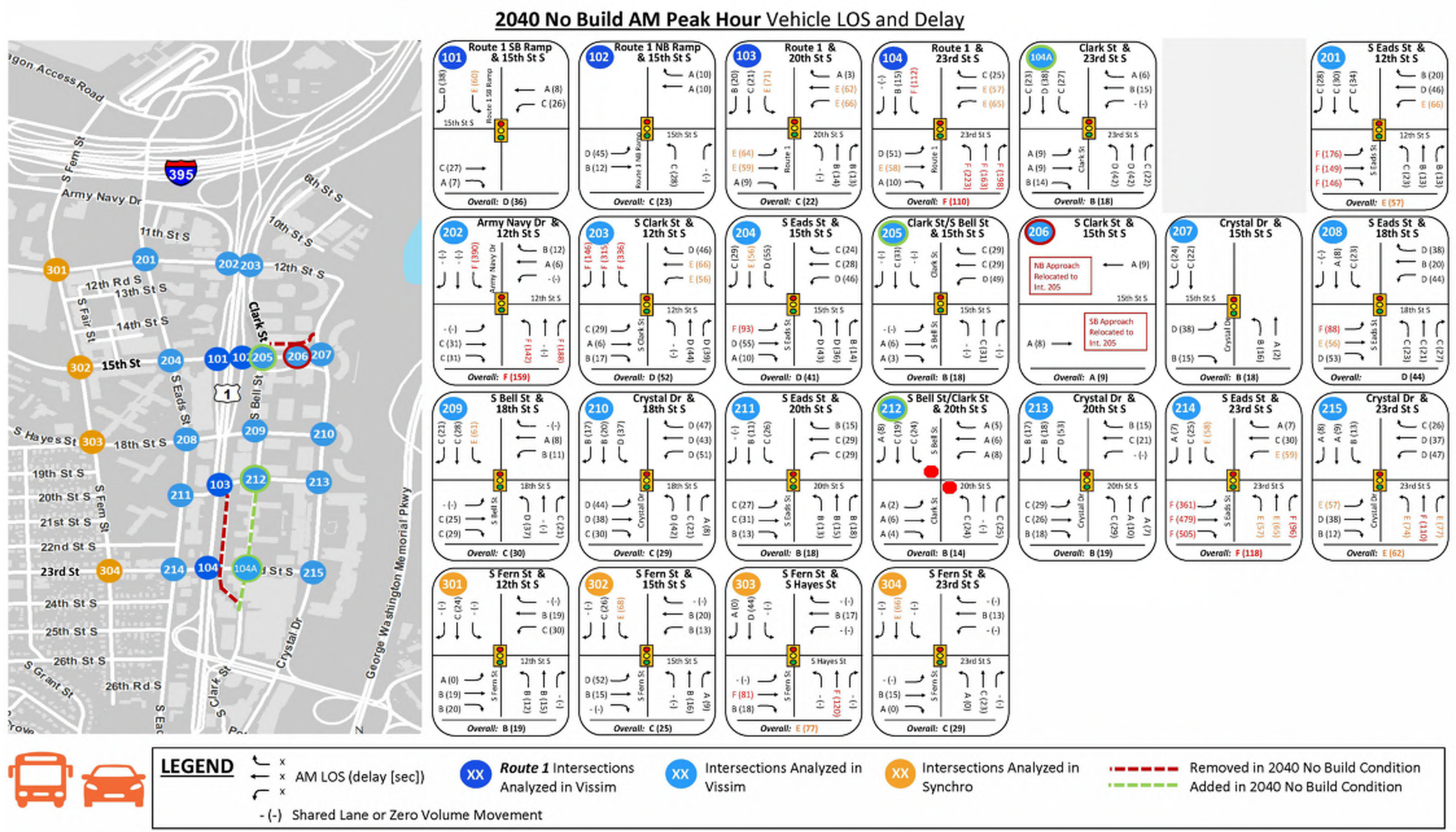


Figure 4-2: 2040 No-Build AM Peak Hour LOS and Delay

2025 No Build PM Peak Hour Vehicle LOS and Delay

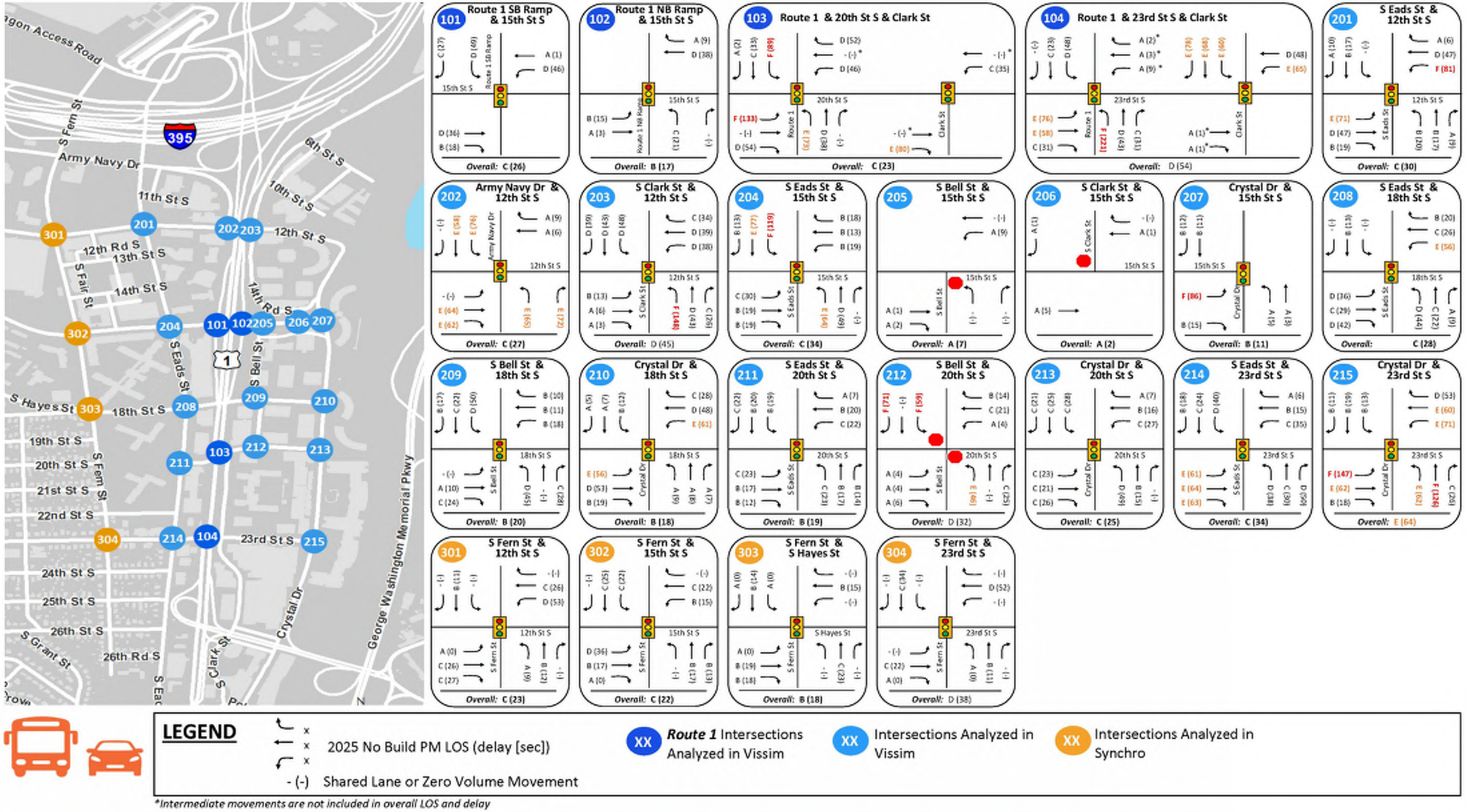


Figure 4-3: 2025 No-Build PM Peak Hour LOS and Delay

2040 No Build PM Peak Hour Vehicle LOS and Delay

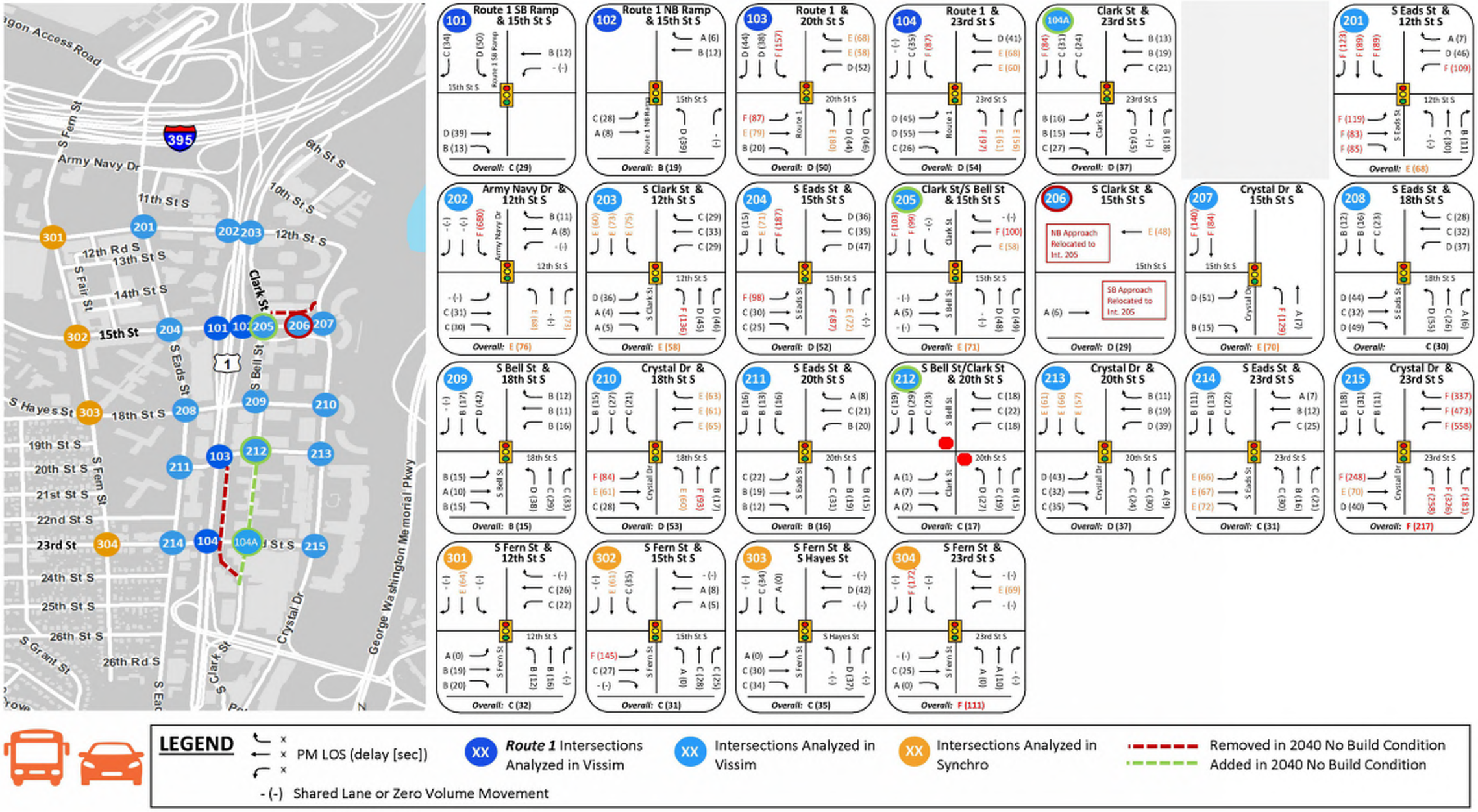


Figure 4-4: 2040 No-Build PM Peak Hour LOS and Delay

Travel Times and Network Travel Speeds

No-Build AM Peak Hour Travel Times and Network Speeds

Figure 4-5 provides a graphical comparison of AM peak hour travel times along northbound and southbound Route 1 through the study area across existing, 2025 No-Build, and 2040 No-Build conditions. **Table 4-1** provides this same comparison in tabular format and includes parallel and east-west routes as well. **Figure 4-6** shows a comparison of average link speeds across the entire Vissim analysis study area for the AM peak hour, comparing the three scenarios side-by-side.

As shown, due to planned side street improvements as well as modifications in signal timing which improve progression and comparable demand, north-south travel times are reduced in the 2025 AM peak hour as compared to existing conditions. Increases in travel time are observed by 2040, especially in the northbound direction; however, by 2040, the improvements at the 20th Street S and 23rd Street S intersections, as well as other side street improvements implemented by Arlington County, mitigate some of this increase in travel time.

Along side streets, the most noticeable changes in travel times between existing and future No-Build conditions are along southbound S Eads Street and eastbound 15th Street S. These locations are adjacent to major planned developments.

East-west travel times along 15th Street S and 18th Street S remain generally consistent during the AM peak hour between existing, 2025 No-Build, and 2040 No-Build conditions.

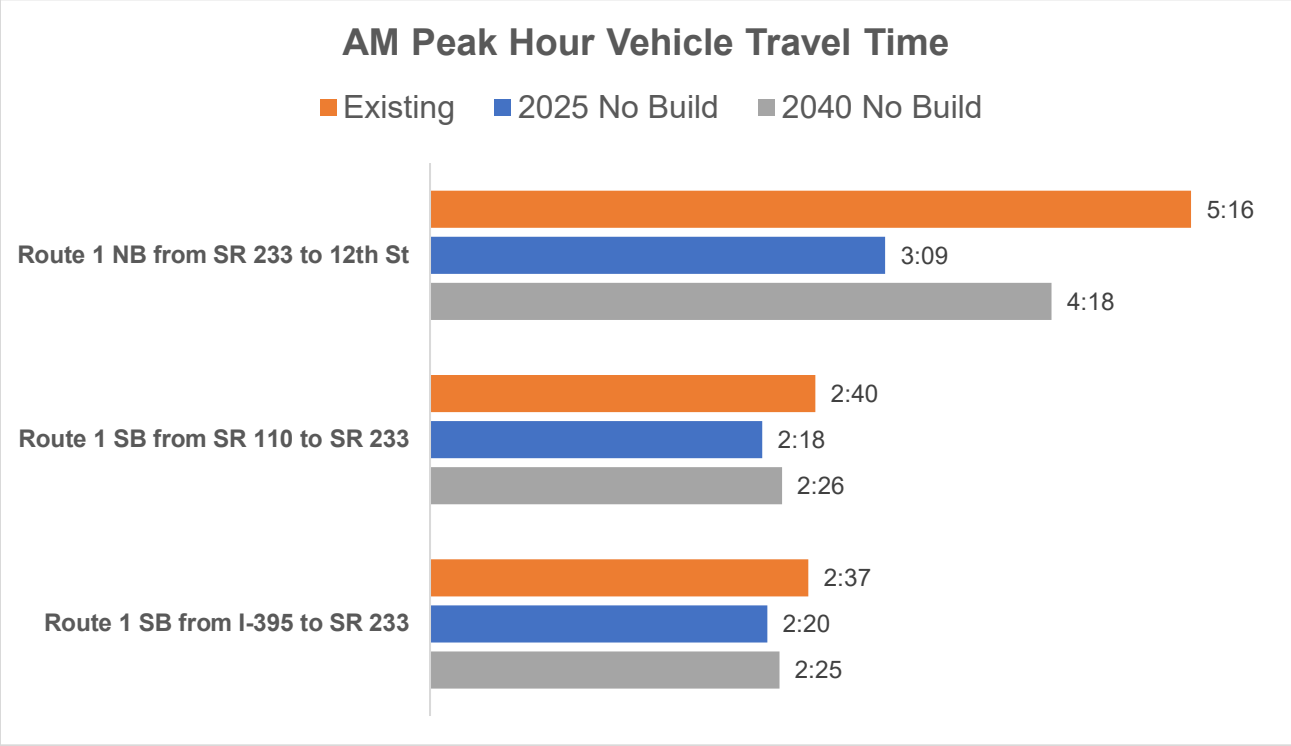


Figure 4-5: AM Peak Hour Vehicle Travel Times – Route 1 Corridor

Table 4-1: AM Peak Hour Vehicle Travel Times – Existing/2025 No-Build/2040 No-Build

Route	Existing (M:SS)	2025 No Build (M:SS)	2040 No Build (M:SS)
Route 1 NB from SR 233 to 12th St	5:16	3:09	4:18
Route 1 SB from 12th St to SR 233	2:08	1:51	1:55
Route 1 SB from SR 110 to SR 233	2:40	2:18	2:26
Route 1 SB from I-395 to SR 233	2:37	2:20	2:25
Eads St NB from 23rd St to 12th St	2:14	2:26	3:10
Eads St SB from 12th St to 23rd St	2:22	3:20	2:59
Crystal Dr NB from 23rd St to 12th St	2:14	2:38	3:07
Crystal Dr SB from 12th St to 23rd St	2:45	2:19	2:48
12th St EB from Eads St to Crystal Dr	0:56	1:09	1:24
12th St WB from Crystal Dr to Eads St	1:14	1:52	1:57
15th St EB from Fern St to Crystal Dr	1:41	2:27	2:28
15th St WB from Crystal Dr to Fern St	1:08	1:17	1:40
18th St EB from Fern St to Crystal Dr	1:15	1:43	2:36
18th St WB from Crystal Dr to Fern St	1:02	1:11	1:06
20th St EB from Eads St to Crystal Dr	2:14	1:55	1:36
20th St WB from Crystal Dr to Eads St	1:24	1:45	1:45
23rd St EB from Eads St to Crystal Dr	1:35	1:23	1:47
23rd St WB from Crystal Dr to Eads St	1:26	1:21	1:57

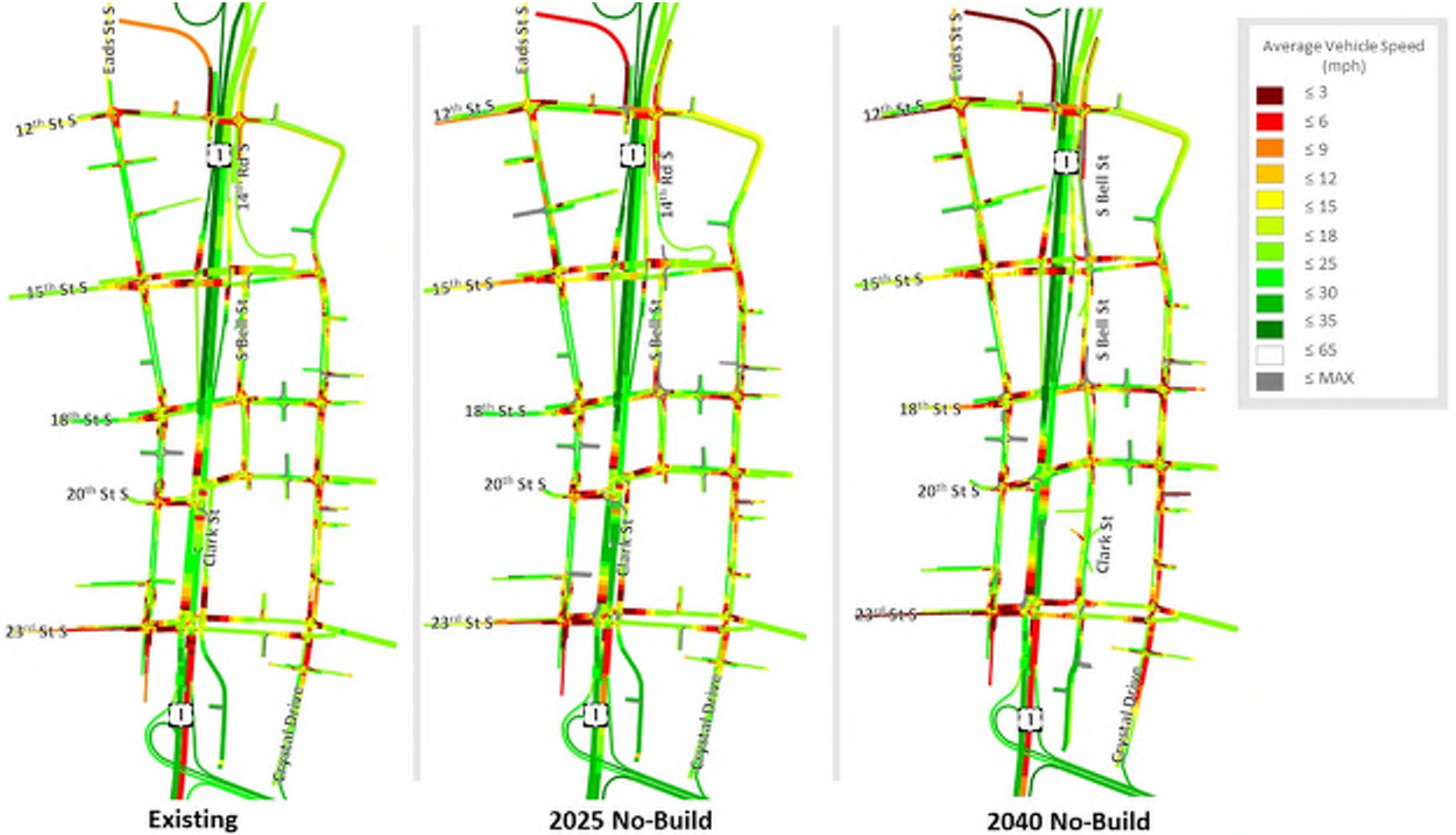


Figure 4-6: Vissim Operational Analysis Area AM Peak Hour Average Speed Maps – Existing/2025 No-Build/2040 No-Build

No-Build PM Peak Hour Travel Times and Network Speeds

Figure 4-7 provides a graphical comparison of PM peak hour travel times along northbound and southbound Route 1 through the study area across existing, 2025 No-Build, and 2040 No-Build conditions. **Table 4-2** provides this same comparison in tabular format and includes parallel and east-west routes as well. **Figure 4-8** shows a comparison of average link speeds across the entire Vissim analysis study area for the PM peak hour, comparing the three scenarios side-by-side.

As shown, due to planned side street improvements as well as modifications in signal timing which improve progression and comparable demand, north-south travel times are reduced in the 2025 PM peak hour as compared to existing conditions. Increases in travel time are observed by 2040, especially in the northbound direction; however, by 2040, the improvements at the 20th Street S and 23rd Street S intersections mitigate some of this increase in travel time.

Along side streets, the most noticeable changes in travel times between existing and future No-Build conditions are along the following facilities:

- Westbound 15th Street S (2040) – this increase in travel time is attributable to the new signal at S Bell Street, which sees over 75 s of delay for the westbound approach.
- Northbound and southbound S Eads Street (2025 and 2040) – these increases in travel time can be tied to increased traffic volumes, including several heavy left turn movements, much of which can be associated with increased development levels along the corridor.
- Northbound and southbound Crystal Drive (2040) – this increase in travel time is largely attributable to increased traffic volumes, including several heavy left turn movements.

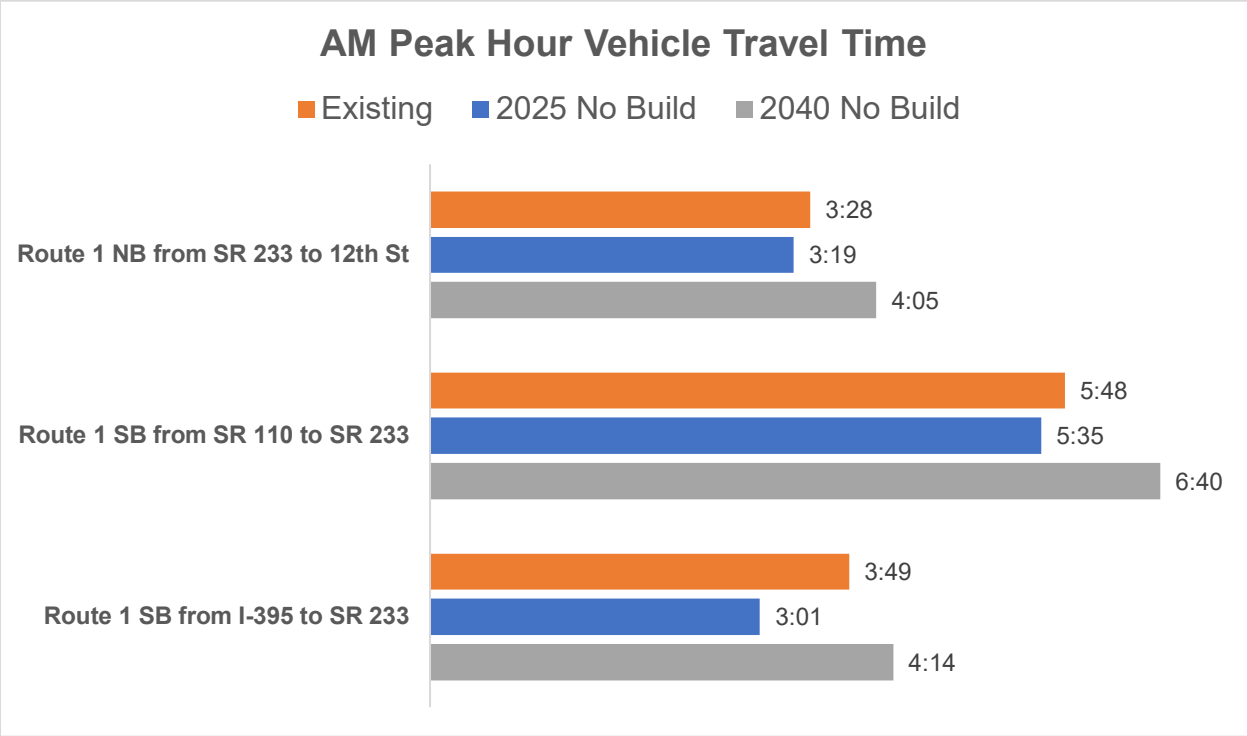


Figure 4-7: PM Peak Hour Vehicle Travel Times – Route 1 Corridor

Table 4-2: PM Peak Hour Vehicle Travel Times - Existing/2025 No-Build/2040 No-Build

Route	Existing (M:SS)	2025 No Build (M:SS)	2040 No Build (M:SS)
Route 1 NB from SR 233 to 12th St	3:28	3:20	4:04
Route 1 SB from 12th St to SR 233	3:26	2:35	3:44
Route 1 SB from SR 110 to SR 233	5:48	5:35	6:40
Route 1 SB from I-395 to SR 233	3:49	3:01	4:14
Eads St NB from 23rd St to 12th St	2:36	3:24	4:16
Eads St SB from 12th St to 23rd St	2:32	4:13	5:14
Crystal Dr NB from 23rd St to 12th St	2:15	3:33	8:16
Crystal Dr SB from 12th St to 23rd St	3:42	2:18	6:12
12th St EB from Eads St to Crystal Dr	0:54	1:42	1:30
12th St WB from Crystal Dr to Eads St	1:23	2:39	2:37
15th St EB from Fern St to Crystal Dr	1:34	1:08	2:07
15th St WB from Crystal Dr to Fern St	1:14	1:29	5:27
18th St EB from Fern St to Crystal Dr	1:13	1:43	1:57
18th St WB from Crystal Dr to Fern St	0:58	1:03	1:12
20th St EB from Eads St to Crystal Dr	1:48	2:45	1:46
20th St WB from Crystal Dr to Eads St	1:35	2:03	1:57
23rd St EB from Eads St to Crystal Dr	1:34	1:37	2:15
23rd St WB from Crystal Dr to Eads St	1:24	1:32	1:57

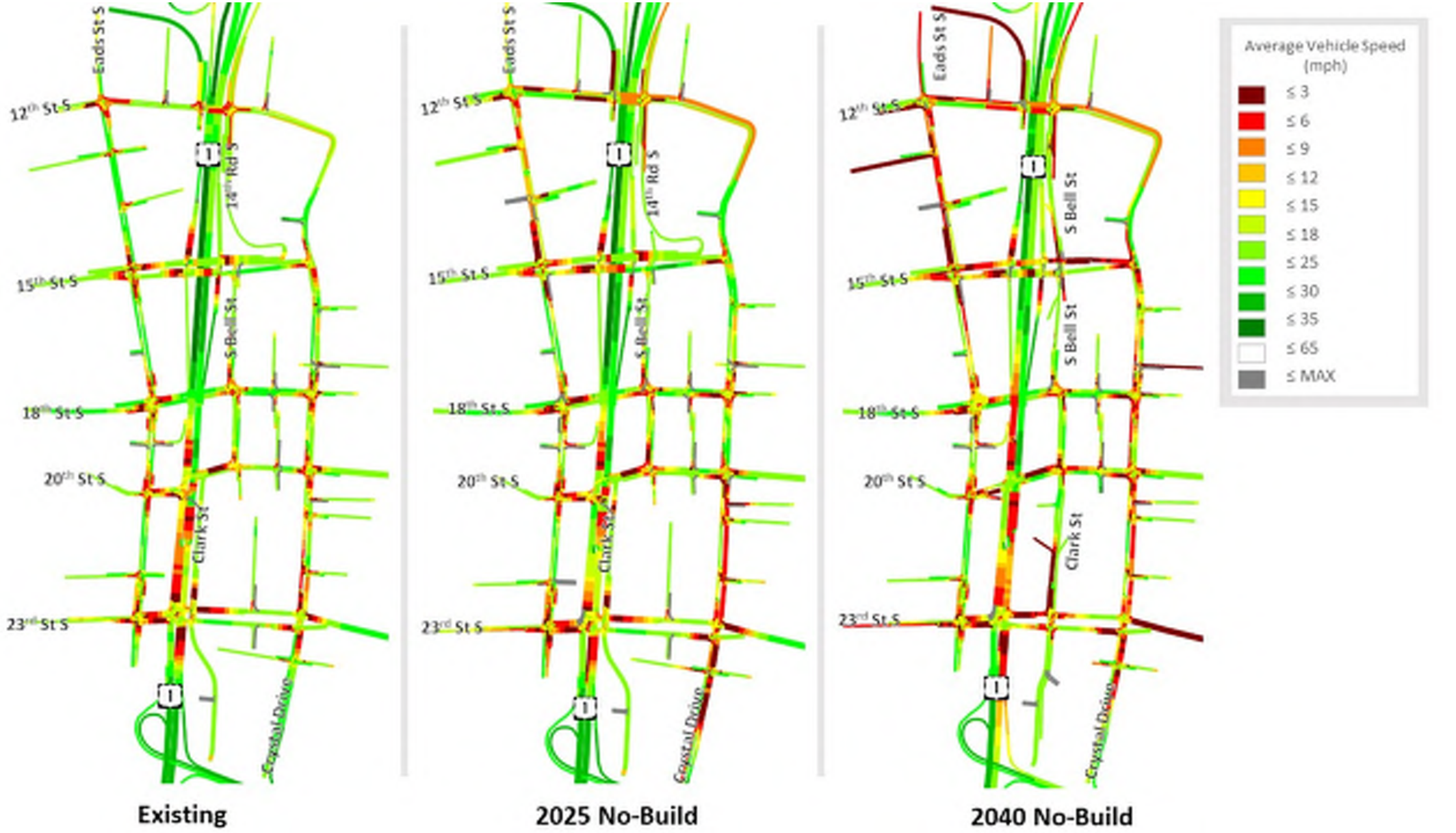


Figure 4-8: Vissim Operational Analysis Area PM Peak Hour Average Speed Maps – Existing/2025 No-Build/2040 No-Build

4.1.2. 2025 and 2040 No-Build Transit Operations

Bus Travel Times

AM Peak Hour Bus Travel Times

Figure 4-9 provides a graphical comparison of AM peak hour bus travel times along key high-frequency routes through the study area (ART 43 and Metroway northbound/southbound) across existing, 2025 No-Build, and 2040 No-Build conditions. **Table 4-3** provides this same comparison in tabular format and includes all bus routes through the study area.

- Along the ART 43 route, which travels through the Route 1/15th Street S interchange and then south along S Bell Street, east along 18th Street S, and back to the 15th Street S interchange via Crystal Drive, travel times increase in 2025 and further in 2040.
- Along the northbound Metroway BRT route, travel times increase in 2025 and further in 2040 due to increased delays along northbound Crystal Drive and westbound 12th Street S, including the new signalized intersection with Army Navy Drive.
- Along the southbound Metroway BRT route, travel times significantly decrease in 2040, as this route follows the newly realigned S Clark Street; in 2040, southbound buses no longer are forced to wait for side street movements at the Route 1/20th Street S and Route 1/23rd Street S intersection clusters, significantly improving travel times.

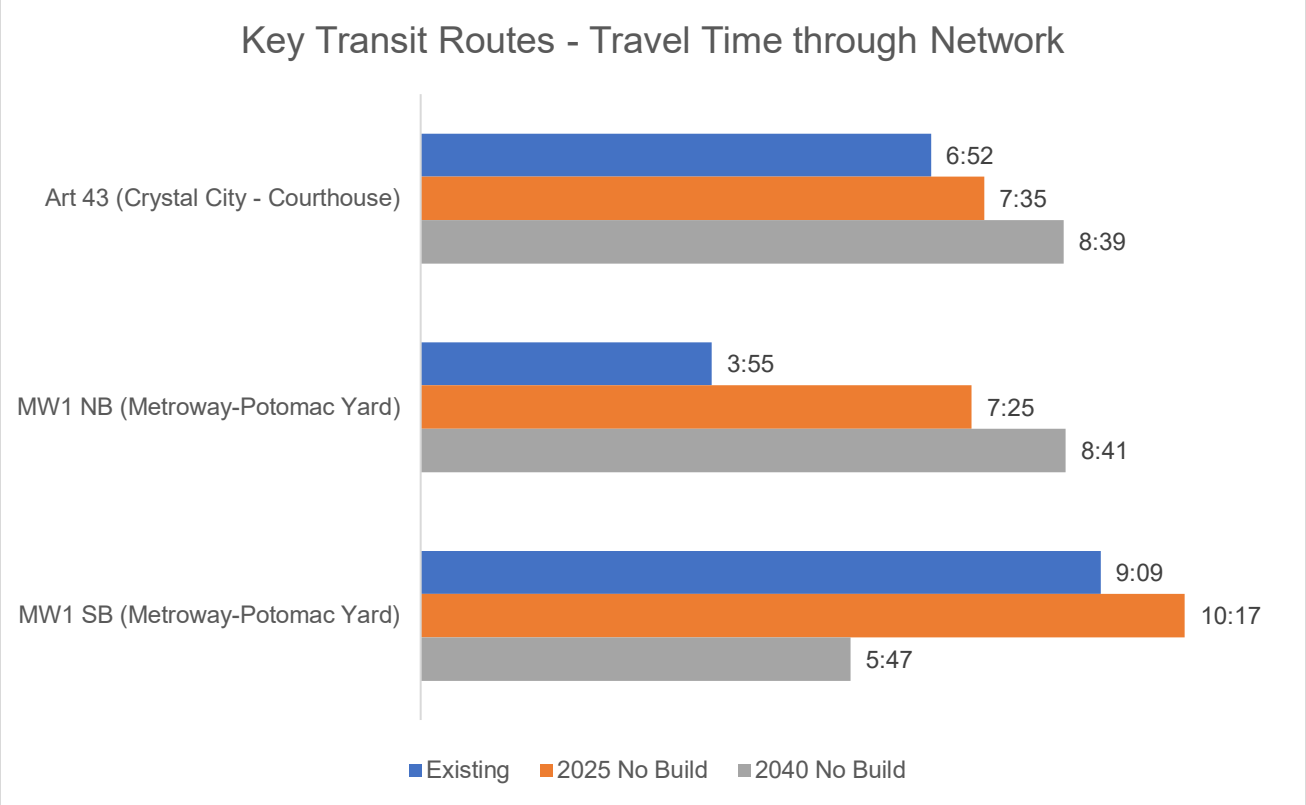


Figure 4-9: AM Peak Hour Transit Travel Time along Key Routes

Table 4-3: AM Peak Hour Transit Travel Times

Provider	Route	Existing		2025 No Build		2040 No Build	
		(M:SS)	Bus Count	(M:SS)	Bus Count	(M:SS)	Bus Count
ART	Art 43 (Crystal City - Courthouse)	6:52	18	7:35	18	8:39	18
WMATA	MW1 NB (Metroway-Potomac Yard)	3:55	23	7:25	23	8:41	23
WMATA	MW1 SB (Metroway-Potomac Yard)	9:09	23	10:17	23	5:47	23
WMATA	7A NB (Lincolnia - North Fairlington)	1:42	4	2:43	4	2:53	4
WMATA	7A SB (Lincolnia - North Fairlington)	1:52	6	2:09	6	2:14	6
WMATA	7F SB (Lincolnia - North Fairlington)	1:48	6	2:15	6	2:23	6
WMATA	7Y NB (Lincolnia - North Fairlington)	4:23	6	5:04	6	5:14	6
WMATA	10A NB (Alexandria-Pentagon)	5:29	6	5:36	6	9:14	6
WMATA	10A SB (Alexandria-Pentagon)	5:37	6	5:22	6	4:13	6
WMATA	22A EB (Barcroft - South Fairlington)	1:48	3	2:44	3	2:47	3
WMATA	22A WB (Barcroft - South Fairlington)	1:39	3	1:48	3	2:00	3
WMATA	23A EB (McLean - Crystal City)	11:58	7	10:31	7	11:03	7
WMATA	23A WB (McLean - Crystal City)	10:00	7	11:02	7	7:55	7
WMATA	23B EB (McLean-Crystal City)	10:25	7	8:48	7	15:38	7
WMATA	23B WB (McLean-Crystal City)	9:14	7	9:23	7	5:18	7
LC	682 (East Gate via Dulles South)	9:09	2	9:40	2	10:21	2
LC	882 (Leesburg via Dulles North)	9:35	4	10:21	4	11:27	4
Fairfax	599 PM WB (Pentagon - Crystal City Express)	4:41	2	4:27	2	6:08	2
OmniRide	L-200 PM (Lake Ridge-Pentagon & Crystal City Express)	4:45	3	5:13	3	5:48	3

PM Peak Hour Bus Travel Times

Figure 4-10 provides a graphical comparison of PM peak hour bus travel times along key high-frequency routes through the study area (ART 43 and Metroway northbound/southbound) across existing, 2025 No-Build, and 2040 No-Build conditions. **Table 4-4** provides this same comparison in tabular format and includes all bus routes through the study area.

- Along the ART 43 route, which travels through the Route 1/15th Street S interchange and then south along S Bell Street, east along 18th Street S, and back to the 15th Street S interchange via Crystal Drive, travel times see continued increases in 2025 and 2040. Some of this increase is attributable to increased travel times along Crystal Drive and westbound 15th Street S approaching the interchange (especially in 2040); however, the route also experiences increased congestion north of the study area along southbound Route 110, which reduces from three lanes to one lane at I-395 and shows worsening congestion in the PM peak period.
- Along the northbound Metroway BRT route, travel times increase in 2025 and 2040 due to increased delays along northbound Crystal Drive and westbound 12th Street S, including the new signalized intersection with Army Navy Drive.
- Along the southbound Metroway BRT route, travel times significantly decrease in 2040 as compared to 2025, as this route follows the newly realigned S Clark Street; in 2040, southbound buses no longer are forced to wait for side street movements at the Route 1/20th Street S and Route 1/23rd Street S intersection clusters. However, the route still experiences delay at the southbound approach to 23rd Street S due to conflicting heavy vehicular demand.

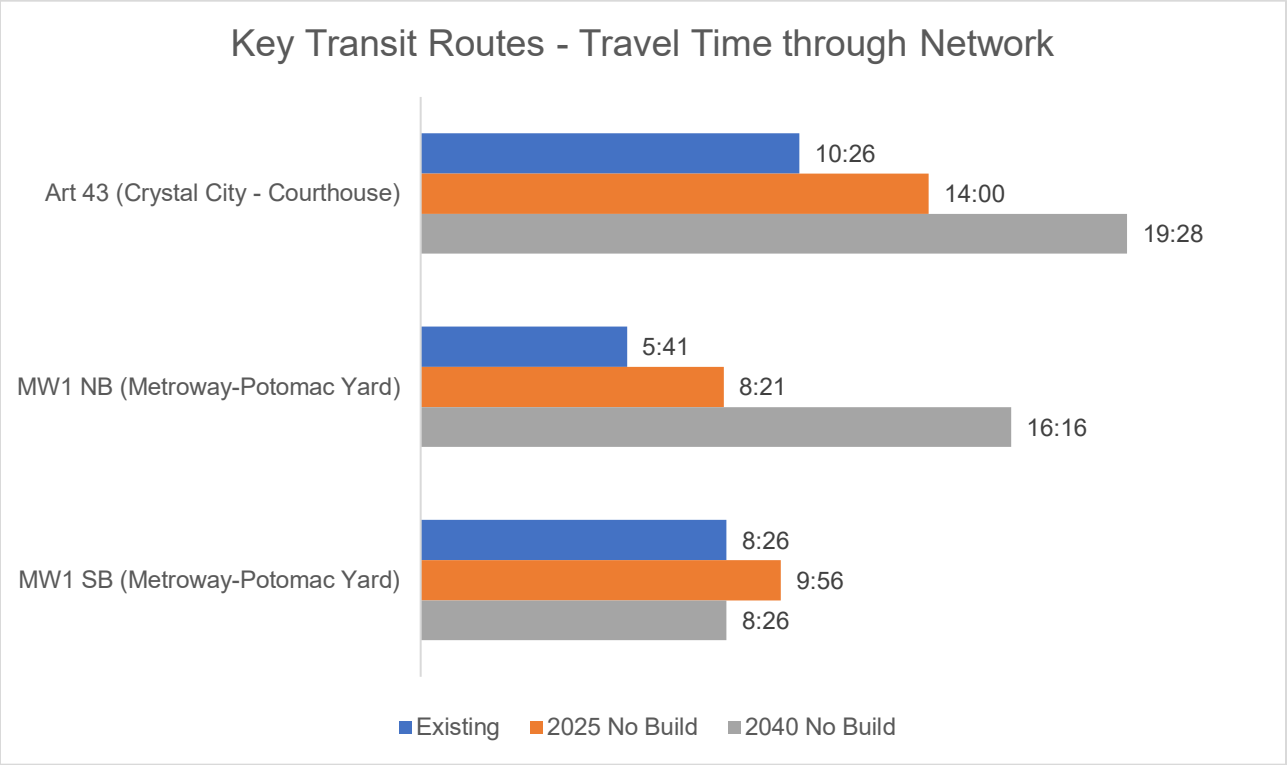


Figure 4-10: PM Peak Hour Transit Travel Time along Key Routes

Table 4-4: PM Peak Hour Transit Travel Times

Provider	Route	Existing	2025 No Build	2040 No Build
ART	Art 43 (Crystal City - Courthouse)	10:26	14:00	19:28
WMATA	MW1 NB (Metroway-Potomac Yard)	5:41	8:21	16:16
WMATA	MW1 SB (Metroway-Potomac Yard)	8:26	9:56	8:26
WMATA	7A NB (Lincolnia - North Fairlington)	1:43	1:54	2:32
WMATA	7F NB (Lincolnia - North Fairlington)	1:31	2:00	2:55
WMATA	7F SB (Lincolnia - North Fairlington)	2:31	1:46	1:57
WMATA	10A NB (Alexandria-Pentagon)	4:51	6:23	7:51
WMATA	10A SB (Alexandria-Pentagon)	5:20	5:35	5:28
WMATA	22A EB (Barcroft - South Fairlington)	2:01	1:46	2:54
WMATA	22A WB (Barcroft - South Fairlington)	1:37	2:39	4:25

Provider	Route	Existing	2025 No Build	2040 No Build
WMATA	23A EB (McLean - Crystal City)	6:10	8:35	12:21
WMATA	23A WB (McLean - Crystal City)	7:06	6:39	7:29
WMATA	23B EB (McLean-Crystal City)	8:42	10:02	12:18
WMATA	23B WB (McLean-Crystal City)	7:51	7:23	8:16
LC	682 (East Gate via Dulles South)	9:29	10:25	11:40
LC	882 (Leesburg via Dulles North)	8:52	9:34	10:01
Fairfax	599 PM WB (Pentagon - Crystal City Express)	7:42	8:45	9:51
OmniRide	L-200 PM (Lake Ridge-Pentagon & Crystal City Express)	8:08	9:38	10:24

4.1.3. 2025 and 2040 No-Build Pedestrian Operations

Several MOEs used for the pedestrian multimodal analysis and documented in the **Existing Conditions Report**, including pedestrian crossing distance, number and type of crosswalks, and pedestrian experience and comfort (sidewalk widths), are based on geometric conditions and will be much more meaningful when compared against future Build concepts. Thus, at this time, a summary of these MOEs is not provided; however, these comparisons will be included in future documentation comparing No-Build versus Build concepts. This section does include a brief summary of changes in pedestrian delay in 2025 and 2040 No-Build conditions.

Pedestrian Delay at Intersections

Figure 4-11 summarizes 2025 No-Build AM and PM pedestrian delays per intersection approach at the core study area intersections, while **Figure 4-12** summarizes this delay for 2040 No-Build conditions. The most significant delays are summarized below and are generally consistent with the existing pedestrian delays experienced at these intersections.

- At the Route 1/15th Street S interchange, the most substantial delays are experienced for the north-south crossing of 15th Street S at the intersection with the northbound ramps. This is fairly consistent with existing conditions.
- There are high delays for pedestrians crossing Route 1 at 20th Street S and at 23rd Street S due to the two-stage crossing assumed to remain in place, consistent with existing conditions.

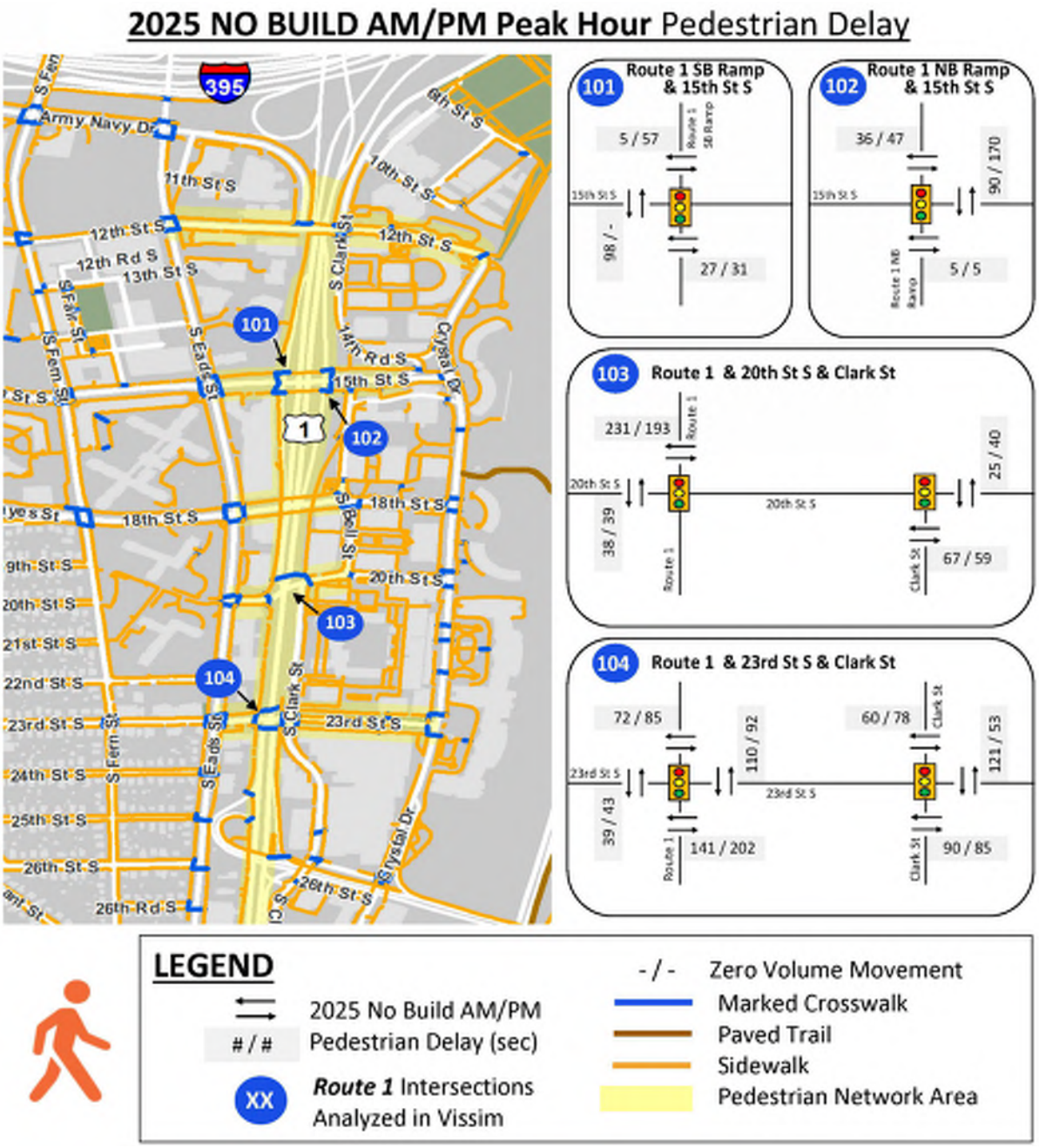


Figure 4-11: 2025 No-Build Peak Hour Pedestrian Delay

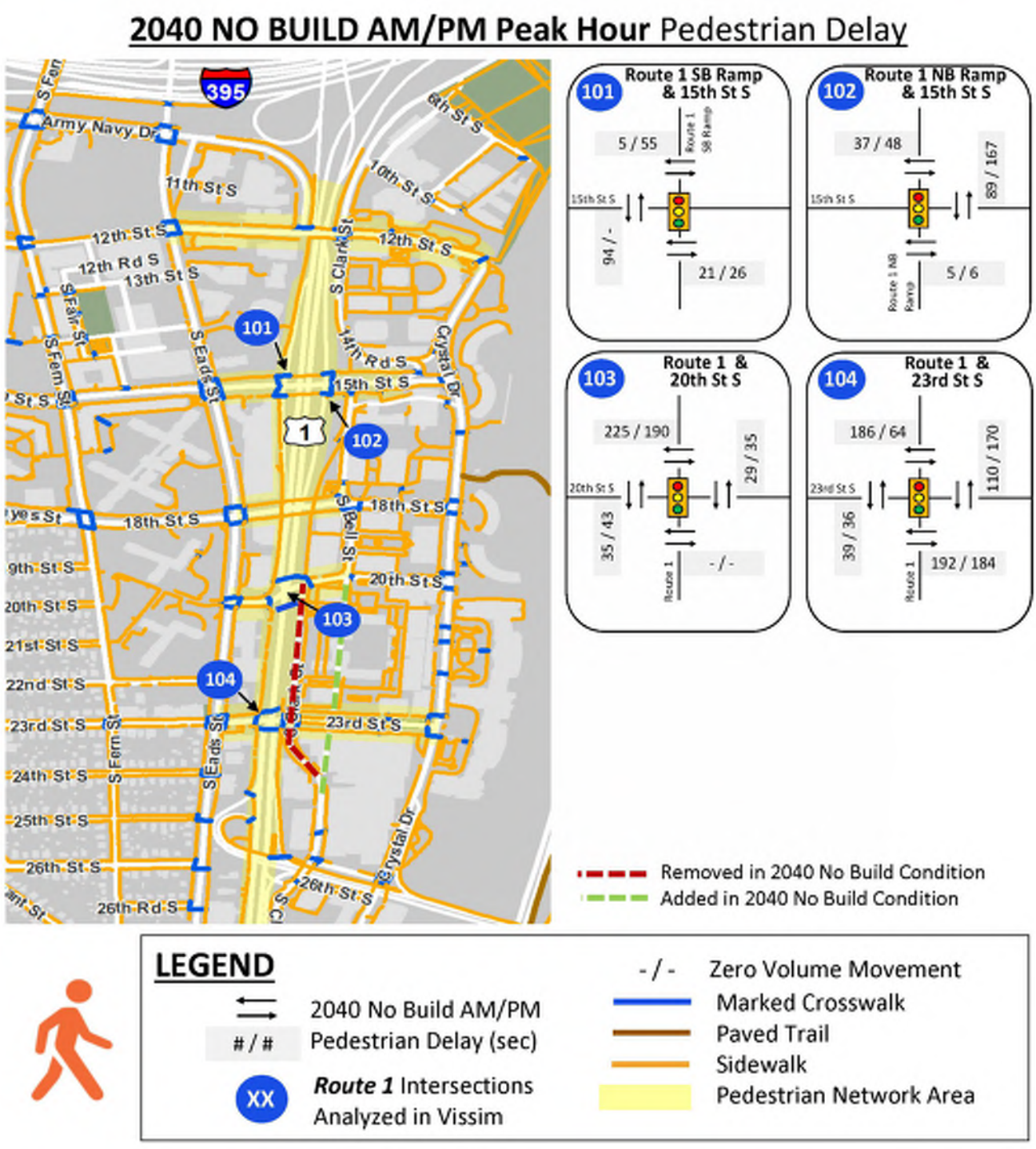


Figure 4-12: 2040 No-Build Peak Hour Pedestrian Delay

4.1.4. 2025 and 2040 No-Build Bicycle Operations

Similar to pedestrian MOEs related to the built environment and documented in the **Existing Conditions Report**, bicycle MOEs based on geometric conditions will be provided in future documentation comparing No-Build versus Build concepts. This includes BLTS. This section includes a brief summary of changes in peak hour bicycle travel time along 15th Street S and 18th Street S.

Bicycle Travel Times along Key Routes

Table 4-5 shows a comparison of bicycle travel times along 15th Street S and 18th Street S between points west of S Eads Street and east of S Bell Street for the AM peak hour across existing, 2025 No-Build, and 2040 No-Build conditions. **Table 4-6** provides this same comparison but for the PM peak hour.

Table 4-5 AM Peak Hour Bike Travel Times

Route	Existing (M:SS)	2025 No Build (M:SS)	2040 No Build (M:SS)
15th Street EB from Eads Street to Bell Street (Bike Lane)	1:53	1:29	2:00
15th Street WB from Bell Street to Eads Street (Mixed Traffic)	1:39	2:02	1:37
18th Street EB from Eads Street to Bell Street (Bike Lane)	1:52	2:07	2:09
18th Street WB from Bell Street to Eads Street (Bike Lane)	1:25	1:38	1:38

Table 4-6 PM Peak Hour Bike Travel Times

Route	Existing (M:SS)	2025 No Build (M:SS)	2040 No Build (M:SS)
15th Street EB from Eads Street to Bell Street (Bike Lane)	1:57	2:41	3:37
15th Street WB from Bell Street to Eads Street (Mixed Traffic)	1:44	2:19	2:50
18th Street EB from Eads Street to Bell Street (Bike Lane)	1:27	1:54	1:50
18th Street WB from Bell Street to Eads Street (Bike Lane)	1:55	2:08	1:55

5. Future No-Build Conditions Summary

- Based on current (baseline) land use projections from Arlington County, total employment in the Route 1 study area is forecasted to more than double by 2040, while total population is forecasted to increase by more than 50 percent.
- Given these changes in land use, as well as growth outside of the study area and anticipated future changes in multimodal trip-making, total vehicular trips in the Route 1 study are forecasted to increase by 28 percent during the AM peak hour and by 36 percent during the PM peak hour by 2040. This growth is largely driven by trips in which the starting and/or end points of the trip are internal to the study area, rather than through trips (such as north/south through trips along Route 1). Growth at various locations along the Route 1 corridor generally aligns with these trends.
- Several notable background transportation improvements are already programmed in the study area, including a variety of improvements by Arlington County to facilitate improved multimodal access such as the extension of the Metroway BRT facility. Along Route 1, the Crystal City Sector Plan calls for the shift of S Clark Street to the east, which allows for reconfiguration and improved operations at the 20th Street S and 23rd Street S signals.
- At the Route 1/15th Street S interchange, demand is forecasted to increase for several conflicting movements, especially in the AM peak hour. These movements include the northbound through and eastbound left turn movements (representing trips out of the study area north toward Washington, DC, or the Rosslyn-Ballston corridor) as well as the southbound left turn movement (representing trips into the study area). The current configuration of the interchange generally allows for these movements to be accommodated with acceptable delay and LOS into the future No-Build conditions.
- Along 18th Street S, the intersections with S Eads Street and S Bell Street operate with acceptable delay and LOS into the future No-Build conditions. The underpass below Route 1 is forecasted to see continued high pedestrian volumes given its proximity to the Crystal City Metrorail Station, with several hundred pedestrians per hour forecasted by the 2040 PM peak hour.
- North-south travel times along Route 1 through the study area (between SR 233 and I-395) do not significantly increase from existing conditions by 2040. This can be attributed in part due to the Sector Plan improvements planned for the intersections with 20th Street S and 23rd Street S.
- Future No-Build MOEs will be compared against future Build MOEs across all modes as part of the study evaluation criteria. The future Build concepts are currently being developed.

Route 1 Multimodal Improvements Study

Future No-Build Conditions Summary

Appendix

May 2021

Appendix A
Route 1 Travel Forecast Summary

Multimodal Travel Forecast Summary

This document summarizes the multimodal traffic forecasting process for this study. Traffic volumes in the study area were forecasted as part of Arlington County's ongoing draft Pentagon City Phased Development Site Plan (PDSP). As part of the County's study, the County has developed and calibrated traffic analysis models, including modified versions of the MWCOG regional travel demand model and a localized subarea travel demand model using PTV Visum software. For the VDOT Route 1 Multimodal Improvements study, the Arlington County models and previously collected traffic data were used to ensure consistency between the VDOT's and Arlington County's studies, as well as to overcome challenges in data collection during the ongoing COVID-19 pandemic.

The land use forecasts for the Route 1 Multimodal study match the baseline land use from the County PDSP study. Vehicular traffic volumes developed for the County's future 2025 and 2040 baseline scenarios are held consistent for this study's 2025 and 2040 No-Build conditions. These baseline scenarios represent the County's most up-to-date approved and unbuilt development forecasts as well as assumptions for background transportation network improvements. These baseline vehicular traffic forecasts, as well as the modeling process to derive these forecasts, have been reviewed and approved by Arlington County Traffic Engineering and Operations (TE&O) staff.

For this study, Kimley-Horn reviewed the travel demand models and traffic forecasts from the Arlington County PDSP study for due diligence. A review of the existing travel demand model validation is provided in the following sections, as well as a review of the future volume forecasting process and outputs.

Existing Conditions Travel Demand Model Validation

Kimley-Horn reviewed the Existing (2019) MWCOG and Visum models provided by Arlington County for their PDSP study. The latest version of the MWCOG model (version 2.3.78) was used, along with modified versions of the Round 9.1a land use forecasts which were updated by County staff to include the latest approved and unbuilt land use forecasts in the County. The Visum subarea models provide a localized traffic assignment that accounts for the detailed roadway network structure and disaggregated traffic analysis zones.

MWCOG MODEL VALIDATION

Arlington County modified the MWCOG model within the Pentagon City and Crystal City areas to have a much more detailed street network, including modifications to the link/node structure, centroid connectors, and transit routes. These network refinements were carried forward to future model scenarios. Kimley-Horn reviewed the existing MWCOG model output loaded network and trip tables as a validation check.

Cutline Validation

Total daily traffic across vehicular cutlines was compiled in accordance with the project Framework Document. Six cutlines, which are detailed in the Framework Document and shown on a map in **Figure 1** were used to compare modeled traffic volumes against observed traffic counts from VDOT and DDOT. Percent difference thresholds for cutlines were determined in coordination with VDOT staff and are shown in **Table 1**; as shown in this table, all six cutlines have their traffic volumes fall within the desired percent difference threshold.

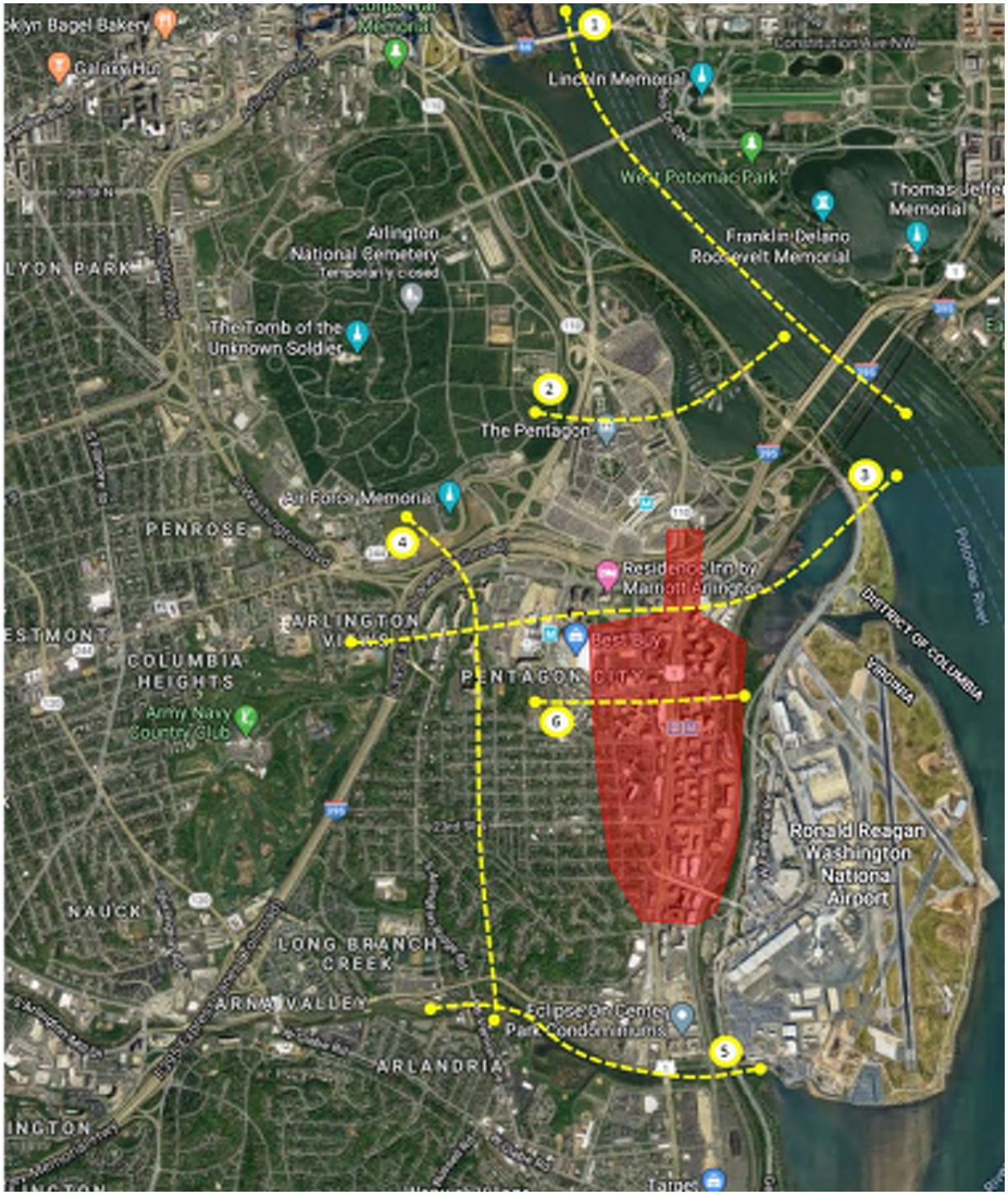


Figure 1. Cutlines for MWCOG Model Validation

Table 1. Cutline (Daily Volume) Validation Outputs

Cutline	Cutline Volume (Counts)	Cutline Volume (Modeled)	% Difference	Criteria	Meets?
#1: Washington, DC, bridge crossings	363,940	356,256	-2.1%	6.0%	Yes
#2: North/south travel north of I-395	221,850	215,347	-2.9%	7.0%	Yes
#3: North/south travel south/east of I-395	420,800	396,476	-5.8%	6.0%	Yes
#4: East/west travel west of study area	266,300	280,075	5.2%	6.0%	Yes
#5: North/south travel south of study area	115,000	114,365	-0.6%	10.0%	Yes
#6: Internal N/S cutline	83,700	75,845	-9.4%	10.0%	Yes

Validation of O-D's by Jurisdiction

Kimley-Horn compared the output trip tables from the modified Arlington County MWCOG model to origin-destination (O-D) data from mobile devices obtained using the VDOT StreetLight Data subscription. O-D's from the MWCOG model were aggregated to the jurisdictional level to understand the modeled flows to and from the TAZs that fall within the study area. StreetLight's O-D using Preset Geography tool was used to derive flows to a polygon representing the study area. **Table 2** shows the percentage breakdown of daily trips to the Route 1 study area as estimated by the MWCOG model versus StreetLight; as shown, the model generally compares very well against the StreetLight estimates.

Table 2. Percentage of Daily Trips to Route 1 Study Area by Jurisdiction

Jurisdiction	MWCOG[1]	StreetLight[2]
Arlington County	40%	38%
City of Alexandria	11%	11%
District of Columbia	9%	19%
Fairfax Co./Fairfax City/Falls Church	21%	15%
Loudoun County	2%	2%
Montgomery County	4%	3%
Prince George's County	5%	4%
Prince William Co/Manassas/Manassas Park	3%	3%
MD - Other	4%	2%
VA - Other	1%	1%
External	0%	1%

VISUM SUBAREA MODEL VALIDATION

Arlington County used a subarea model, built using PTV Visum software, to provide a much more detailed and localized traffic assignment in the Pentagon City and Crystal City area. This subarea model was extracted using O-D's and zones starting from the MWCOG model. The subarea network and zone

[1]Using MWCOG mode trip tables (MTT) for the entire day summed across all vehicular modes, including transit.
[2] StreetLight's estimate of personal travel into the study area; from experience, this captures auto and transit (rail/bus) trips.

structure, shown in **Figure 2**, has been refined to include all roadway links in the study area as well as many driveways. Additional details, such as link speeds and number of lanes on approaches, as well as intersection control and traffic signal timing (where applicable), have been incorporated into the Visum model and are used to influence traffic assignment.

The County used a spreadsheet process to disaggregate the trip tables, as MWCOG zones within the study area were split into multiple subzones. Within the figure, original zones from the MWCOG model are shown in blue while new split zones are shown in green; all external cordon zones are shown in red. The County's spreadsheet disaggregation process also included applying scaling factors to go from peak period trips in the MWCOG model to peak hour trips for O-D routing in the study Vissim traffic simulation models. The disaggregated trip tables are then assigned to the Visum network using link and intersection capacity as additional constraints on the equilibrium assignment. For the existing model validation, Visum's matrix correction procedure (using the Least Squares method) was used to further adjust the input matrix such that the assigned traffic volumes align with the County's 2019 peak-hour turning movement counts. These final adjustment factors can then be applied to the input matrices for the future scenario traffic assignments.

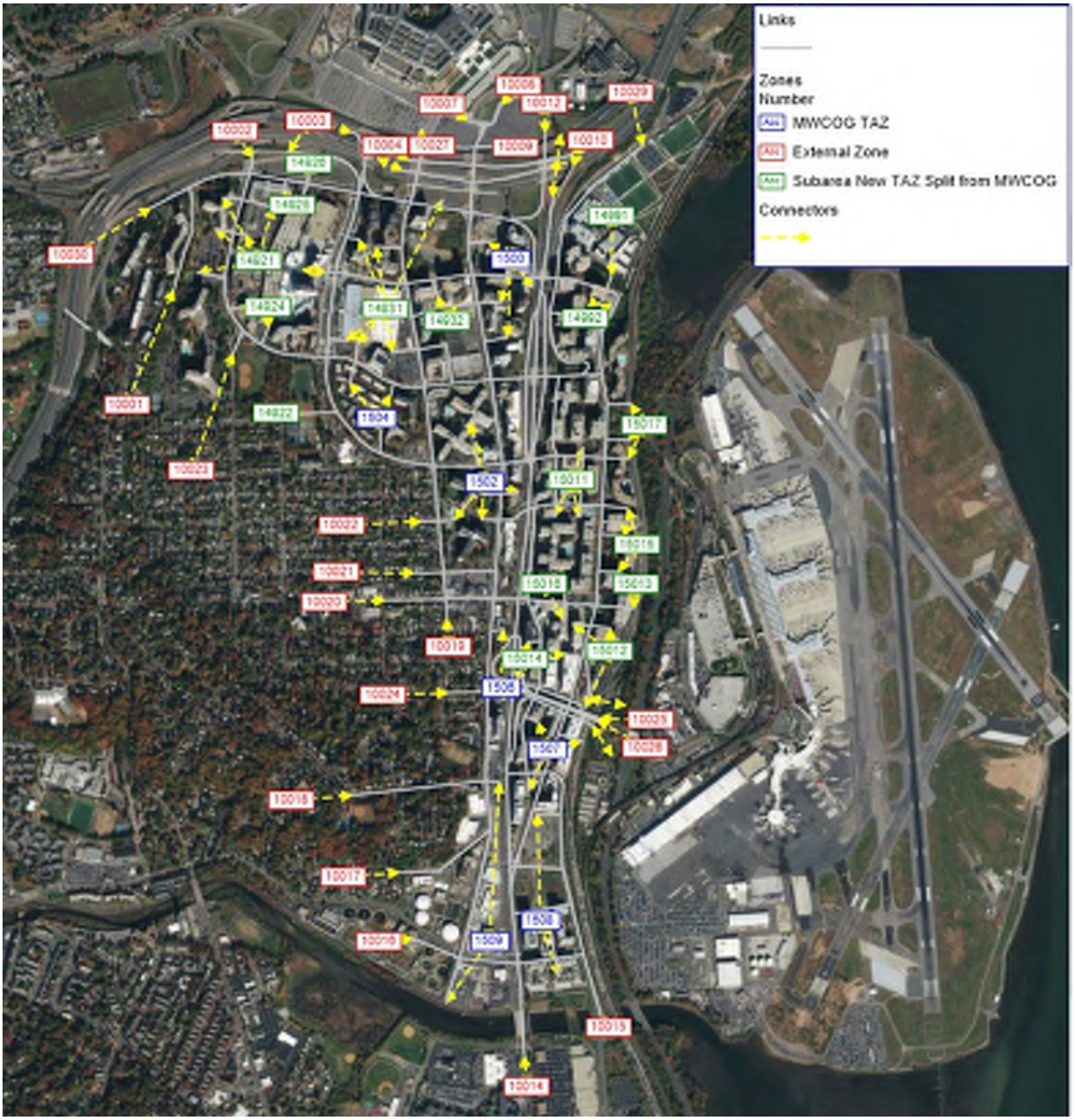


Figure 2. Visum Subarea Network for Arlington County PDSP Study

Future Volume Forecasting

Future vehicular traffic volumes for the Route 1 Multimodal Improvements study for 2025 and 2040 No-Build conditions will align with Arlington County's PDSP study 2025 and 2040 baseline traffic forecasts, respectively. These traffic volumes were developed by the County using their modified version of the MWCOG model and Visum subarea models for the respective future analysis years. The following sections summarize the changes to land use and background transportation networks assumed in these models; in addition, a summary of peak-hour traffic volume trends is described.

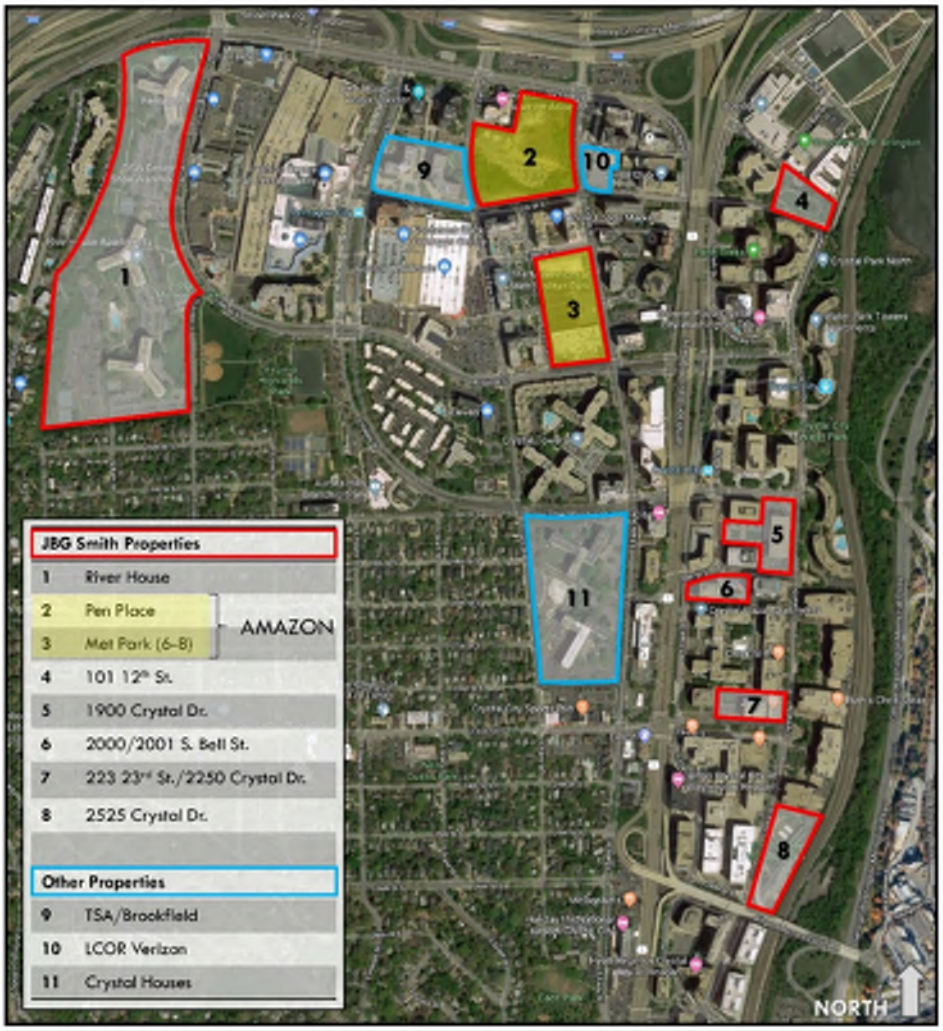
Separately, Kimley-Horn developed bicycle and pedestrian forecasts for intersections in the Core Street area of the overall Route 1 study area; this includes signalized intersections along Route 1 and intersections along 15th Street S and 18th Street S immediately adjacent to Route 1. This process is described in the following sections as well.

LAND USE FORECASTS AND BACKGROUND DEVELOPMENTS

Arlington County provided modified land use forecasts as inputs to the MWCOG model for future analysis years. The land use forecasts for the Route 1 Multimodal study will match the baseline land use from the County PDSP study. These forecasts represent the latest development forecasts from the County, including the Route 1 study area. **Table 3** summarizes the forecasted total population and employment in the study area. The locations of these zones can be seen in **Figure 2**; for zones that have been disaggregated into multiple zones within the Visum model, the first four digits of the zone number correspond to the parent MWCOG zone. As shown, total employment in the study area is forecasted to more than double by 2040, while total population is forecasted to increase by approximately 50 percent. These projections account for the developments shown in **Figure 3** (provided by Arlington County).

Table 3. Population and Employment Projections in Route 1 Study Area (Modified Round 9.1a Forecasts)

TAZ	2021		2025		2040	
	Pop	Emp	Pop	Emp	Pop	Emp
1493	2,279	5,563	2,604	11,414	2,604	25,881
1499	539	7,505	539	9,186	648	10,579
1500	2,606	574	2,963	534	3,684	534
1501	3,611	22,408	4,232	24,118	7,755	37,537
1502	3,465	1,528	4,396	1,608	4,849	1,623
1503	553	121	576	115	588	116
1504	1,335	303	1,020	304	1,020	307
Total	**14,388**	**38,002**	**16,330**	**47,279**	**21,148**	**76,577**
	52,390		**63,609**		**97,725**	
Percent Change	**-**		**21%**		**87%**	
Annual Growth Rate (Linear)	**-**		**5.35%**		**3.58%**	



		PROPOSED/ANTICIPATED GFA	PUBLIC HEARINGS SCHEDULE
APPROVED APPLICATIONS			
3	Met Park 6-8	2,000,000 SF of office; 100,000 SF of retail	PC/CB December 2019 (Approved)
5	1900 Crystal Drive	786,000 SF of residential	PC/CB Mar 2020 (Approved)
10	LCOR Verizon	272,000 SF of residential; 11,000 SF of retail	PC/CB October 2019 (Approved)
11	Crystal Houses	436,000 SF of residential	PC/CB December 2019 (Approved)
FINAL APPLICATIONS			
4	101 12th Street	250,000 SF of office	PC/CB Fall 2020
6	2000/2001 S. Bell Street	750,000 SF of residential	TBD/Early 2021
7	223 23rd Street/2250 Crystal Drive	490,000 SF of residential; 500,000 SF of office	TBD/Early 2021
PRELIMINARY APPLICATIONS			
1	River House	1,595,000 SF of residential	
8	2525 Crystal Drive	800,000 SF of residential	
CONCEPT APPLICATIONS			
9	TSA/Brookfield	1,487,000 SF of office/residential/hotel/retail	
ANTICIPATED APPLICATIONS			
2	Pen Place	2,000,000 million SF of office; retail TBD	
TOTAL ANTICIPATED DENSITY		**11,500,000 SF (APPROXIMATELY)**	

Source: Arlington County Department of Community Planning, Housing, and Development (CPHD)

Figure 3. Planned and Approved Developments in Study Area

BACKGROUND TRANSPORTATION NETWORK IMPROVEMENTS

Arlington County verified several planned projects to modify or improve the roadway network and transit operations within the PDSP study area for future analysis years. **Table 4** shows these projects, which are included in the MWCOG, Visum, and Vissim models provided by Arlington County (where applicable).

Table 4. Background Transportation Network Improvements

Project Name	Project Description (Within Route 1 Study Area)	Model Year		Included in Arlington County PDSP Models?
		2025	2040	
Army Navy Drive Complete Street	• Repurpose travel lanes as dedicated bus lanes • Repurpose travel lanes to accommodate protected bike lanes	✓	✓	Yes
12th Street S Complete Street / Transitway Segment II	• Repurpose travel lanes as dedicated bus lanes • Add new traffic signal at Army Navy Drive & 12th Street S • Additional pedestrian and bicycle accommodations	✓	✓	Yes
Transitway Segments I, III, and IV	• Repurpose travel lanes as dedicated bus lanes • Add new traffic signal at 12th Street S & S Elm Street • Extend WMATA Metroway service along segments of Crystal Drive, 12th Street S, S Hayes Street, Army Navy Drive, S Clark Street, and S Bell Street • Signal phasing modifications to accommodate protected bus movements	✓	✓	Yes
18th Street S Complete Street	• Modify lane configuration to shorten pedestrian crossings and extend protected bike lane buffers closer to the intersections • Modify signal at 18th Street S & S Fern Street	✓	✓	Yes
Met Park Traffic Signal Additions and Modifications	• Modify signal at 15th Street S & S Eads Street • Add new signal at S Eads Street & 13th Street S • Add new signal at S Eads Street & 14th Street S • Add new signal at 15th Street S & S Elm Street	✓	✓	Yes
15th Street S Re-Alignment	• Add new signal at 15th Street S & Clark Street/Bell Street		✓	Yes
20th Street S Re-Alignment	• Modify lane configuration per the Crystal City Sector Plan	✓	✓	Yes
20th Street S / Route 1 / S Clark Street Intersection Cluster Re-Alignment	Note: improvements from Crystal City Sector Plan identified by VDOT as desired to be included in Route 1 No-Build conditions • Relocate S Clark Street to east to tie in to 20th Street S directly across from S Bell Street • Convert S Clark Street from one-way to two-way • Realign Route 1 / 20th Street S intersection to orient the EB and WB approaches directly across from each other and adjust phasing and timings accordingly		✓	No
23rd Street S Re-Alignment	• Adjust EB/WB phasing at Route 1 & 23rd Street S to include protected/permitted left turn movements • Minor adjustments to 23rd Street S & S Eads Street phasing and timing	✓	✓	Yes
23rd Street S / Route 1 / S Clark Street Intersection Cluster Re-Alignment	Note: improvements from Crystal City Sector Plan identified by VDOT as desired to be included in Route 1 No-Build conditions • Relocate S Clark Street to east to tie in to 23rd Street S further to the east • Convert S Clark St from one-way to two-way • Adjust phasing and timing at Route 1 / 23rd Street S intersection to eliminate dedicated phases for S Clark St access		✓	No

Source: Arlington County Traffic Engineering and Operations (TE&O) staff

MODE CHOICE ASSUMPTIONS

The Pentagon City PDSP Transportation Analysis used the MWCOG travel demand model as the basis for its volume projections; these forecasts are ultimately rooted in the automobile mode trip projections from the mode choice model of the MWCOG model. This mode choice model is applied to the entire region but accounts for differences between jurisdictions at the TAZ level, such as walk and drive access to transit, household income, development density, and transit travel times, among others. Given that this mode choice model accounts for different characteristics of each jurisdiction (including Arlington County), it would not be suitable to disregard the mode choice process used in the model for one locality (and replace it with different mode split assumptions during post-processing) while adhering to the model's process for all other jurisdictions. Therefore, the mode splits from the MWCOG model were utilized in both studies for the study area. In the County PDSP study area, the modeled daily mode splits are as follows:

- 2025: Automobile 74%, Transit 26%
- 2040: Automobile 71%, Transit 29%

The results show that the mode choice model is sensitive to changes in land use; in this case, the significant increase in population and employment in the study area between 2025 and 2040 decreases the daily automobile mode and increases the transit mode share by 3 percent.

BICYCLE AND PEDESTRIAN FORECASTS

Background forecasts for non-vehicular modes (bicycles and pedestrians) were developed utilizing existing bicycle and pedestrian counts and adjusting these using the growth rates for the total population and employment in the MWCOG zones in the Pentagon City and Crystal City areas as shown in **Table 3**. This results in an annual growth rate of 5.35 percent from 2019 to 2025 and 3.58 percent from 2025 to 2040. Additional pedestrian volumes were layered on top of the background forecasts at the Route 1 and 15th Street S interchange based on forecasted volumes provided in the traffic impact study for the Met Park development (development #3 in **Figure 3**) as well as anticipated comparable pedestrian volumes from the planned Penn Place development (development #2 in **Figure 3**). The forecasted bicycle and pedestrian volumes will be provided as inputs to the 2025 and 2040 Vissim models for the Route 1 study area. The forecasted pedestrian volumes for the east-west crossings of Route 1 are shown in **Table 5**.

Table 5. Forecasted Pedestrian Volumes for East-West Crossings of Route 1

Crossing of Route 1	E/W Ped Crossing	Existing (2019)		2025 Forecast		2040 Forecast	
		AM	PM	AM	PM	AM	PM
15th Street S	North Side	33	56	147	168	274	302
	South Side	29	45	141	153	264	279
18th Street S	North Side	356	627	470	828	722	1,273
	South Side	147	195	194	258	298	397

VEHICULAR TRAFFIC FORECASTS

Future 2025 and 2040 No-Build vehicular traffic forecasts for the Route 1 study will use the Arlington County PDSP volumes in accordance with the County's forecasting methodology. All relevant modifications made to existing conditions travel demand model during the validation process were carried forward to future analysis year scenarios. The MWCOG model was run for 2025 and 2040 No-Build analysis years. The travel demand model No-Build networks included all roadway and transit projects and

updated socioeconomic data forecasts within Arlington County as described in the previous sections. The output trip tables from the MWCOG model have been disaggregated, adjusted, and brought into Visum models for the study area and then assigned to the study area network, resulting in peak-hour vehicular traffic volumes.

It is assumed that the same future forecast volumes will also be used as the starting point for Build scenarios for the same analysis years; these volumes may will be redistributed within the network for the Build scenario based on the proposed geometric changes.

Historic Vehicle Traffic Counts

VDOT compiles traffic count estimates for roadways throughout the Commonwealth each year[3]. **Figure 4** provides a plot of AADTs by year along two segments of Route 1 in south Arlington; **Figure 5** provides a plot of AADTs by year along various cross streets in the study area; and **Figure 6** provides a plot of AADTs by year along streets running parallel to Route 1 in the study area. These figures suggest that over nearly the past 15 years, traffic volumes in the study area have remained relatively consistent. However, traffic count data in this area is complicated by the impacts of the Great Recession and the US Department of Defense's 2005 Base Realignment and Closure (BRAC) process, which relocated 17,000 jobs from Arlington County[4], many of which were in the Crystal City area and resulted in high commercial vacancy rates.

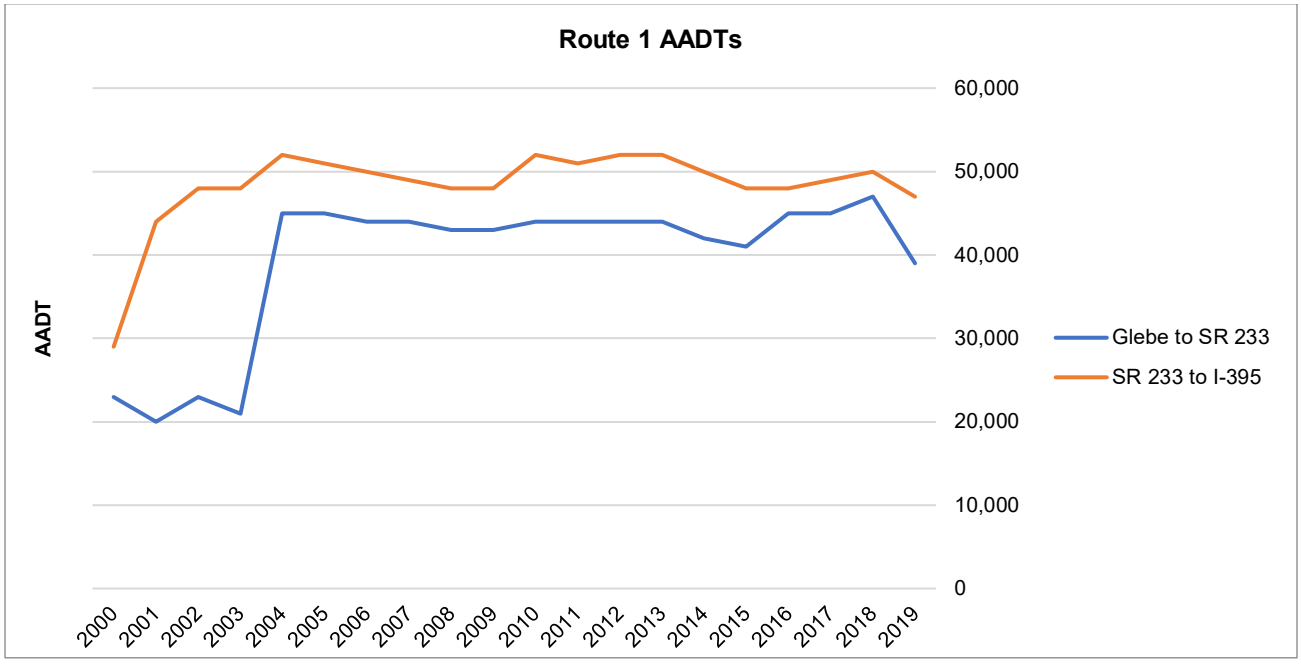


Figure 4. Historic AADTs along Route 1 in Study Area

[3] https://www.virginiadot.org/info/ct-TrafficCounts.asp
[4] https://www.arlingtoneconomicdevelopment.com/resources/blog/economic-development-trends-that-shaped-a-decade-planning-and-placemaking/

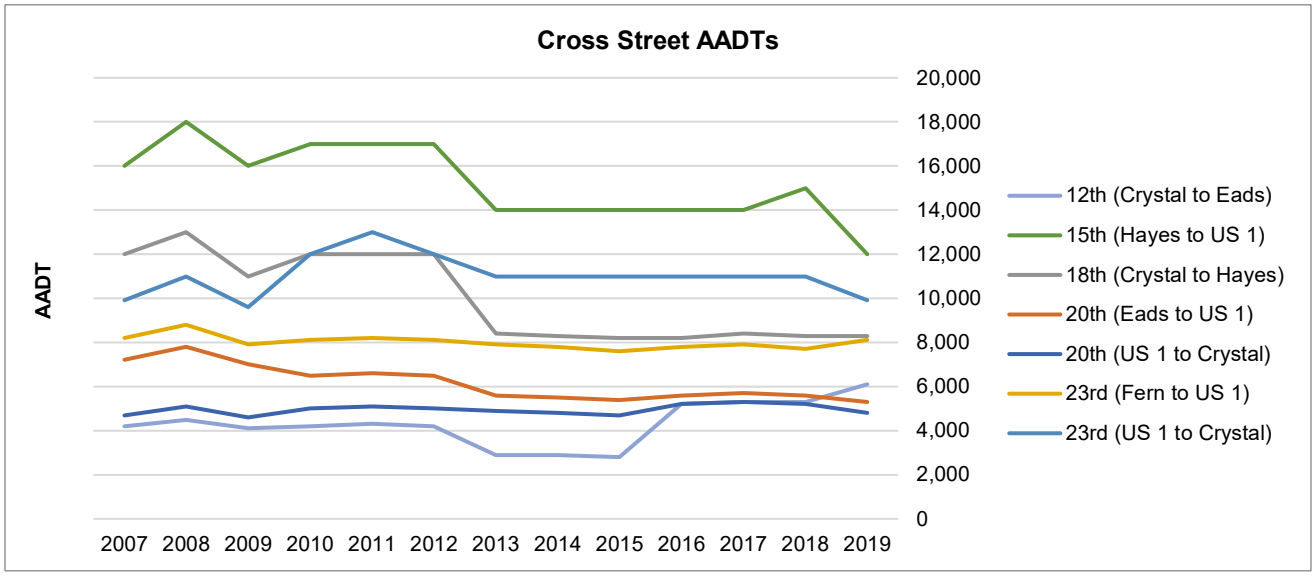


Figure 5. Route 1 Cross Street Historic AADTs in Study Area

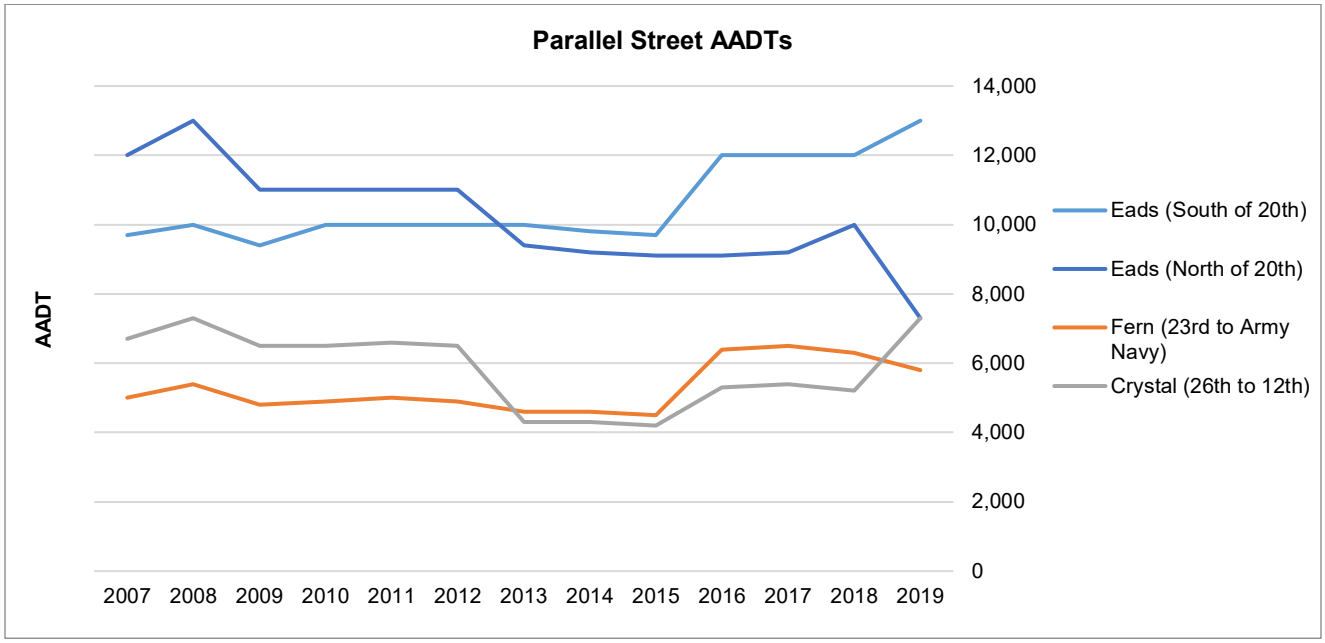


Figure 6. Route 1 Parallel Street Historic AADTs in Study Area

Vehicular Traffic Forecast Observations

Figure 7 through **Figure 12** at the end of this document provide the Existing (2019), 2025, and 2040 AM and PM peak hour vehicular traffic forecast volumes. Notable observations from the forecasts provided by Arlington County include the following:

- Traffic volumes along Route 1:
  - **Table 5** shows the increases in Route 1 northbound mainline volumes for the AM peak hour out to 2025 and 2040. In 2025, the most significant increase is at the north end of the corridor (2.1 percent annual growth). In 2040, growth rates are fairly consistent along the corridor, ranging between 1.2 and 1.7 percent annually.
  - **Table 6** shows the increase in Route 1 southbound mainline volumes for the AM peak hour out to 2025 and 2040. In 2025, there is forecasted decrease in volume south of 20th Street S. In 2040, the growth rates at the far north and south ends of the corridor are much higher, suggesting a growth in trips starting or ending in the Crystal City/Pentagon City area.
  - **Table 7** shows the increase in Route 1 northbound mainline volumes for the PM peak hour out to 2025 and 2040. In 2025, the most significant increase is at the north end of the corridor (1.6 percent annual growth), while there is a forecasted decrease in volume between 20th Street S and 23rd Street S. In 2040, growth ranges from 0.9 percent annually (south end of the corridor) to 1.6 percent annually (north end of the corridor).
  - **Table 8** shows the increase in Route 1 southbound mainline volumes for the PM peak hour out to 2025 and 2040. In both 2025 and 2040, the largest increases are for the segment near the 18th Street S overpass, likely due to capacity being constrained at the southbound off-ramp to 15th Street S, resulting in southbound trips into the study area turning off the corridor at 20th Street S.
- The most notable increase in volume for movements onto and off of Route 1 is at the 15th Street interchange, with significant demand increases for the southbound off-ramp and northbound on-ramp, especially during the AM peak hour. This likely reflects increased demand for trips between the study area and Washington, DC, or the Rosslyn/Ballston corridor of Arlington County.

Table 6. Forecasted Changes in Route 1 Northbound Mainline Volumes, AM Peak Hour

Location	Northbound volume at crossing						
	Existing (2019)	2025	% Difference from Existing	Annual % Change (Linear)	2040	% Difference from Existing	Annual % Change (Linear)
North of 15th Street S	2,985	3,360	13%	2.1%	4,063	36%	1.7%
18th St S	2,225	2,321	4%	0.7%	2,847	28%	1.3%
20th St S	2,035	2,145	5%	0.9%	2,556	26%	1.2%
23rd St S	1,885	1,978	5%	0.8%	2,495	32%	1.5%

Table 7. Forecasted Changes in Route 1 Southbound Mainline Volumes, AM Peak Hour

Location	Southbound volume at crossing						
	Existing (2019)	2025	% Difference from Existing	Annual % Change (Linear)	2040	% Difference from Existing	Annual % Change (Linear)
North of 15th Street S	2,305	2,416	5%	0.8%	2,806	22%	1.0%
18th St S	1,700	1,745	3%	0.4%	1,726	2%	0.1%
20th St S	1,595	1,434	-10%	-1.7%	1,794	12%	0.6%
23rd St S	1,265	1,157	-9%	-1.4%	1,630	29%	1.4%

Table 8. Forecasted Changes in Route 1 Northbound Mainline Volumes, PM Peak Hour

Location	Northbound volume at crossing						
	Existing (2019)	2025	% Difference from Existing	Annual % Change (Linear)	2040	% Difference from Existing	Annual % Change (Linear)
North of 15th Street S	2,205	2,418	10%	1.6%	2,932	33%	1.6%
18th St S	1,745	1,854	6%	1.0%	2,234	28%	1.3%
20th St S	1,625	1,551	-5%	-0.8%	1,942	20%	0.9%
23rd St S	1,595	1,630	2%	0.4%	1,888	18%	0.9%

Table 9. Forecasted Changes in Route 1 Southbound Mainline Volumes, PM Peak Hour

Location	Southbound volume at crossing						
	Existing (2019)	2025	% Difference from Existing	Annual % Change (Linear)	2040	% Difference from Existing	Annual % Change (Linear)
North of 15th Street S	2,680	2,878	7%	1.2%	3,413	27%	1.3%
18th St S	1,665	2,029	22%	3.6%	2,452	47%	2.3%
20th St S	1,775	1,899	7%	1.2%	2,481	40%	1.9%
23rd St S	2,235	2,438	9%	1.5%	2,918	31%	1.5%

- Growth in trips in study area by trip end type – broken down by external to external (E-E, or through trips), external to internal (E-I, or trips starting outside the study area), internal to external (I-E, or trips ending outside the study area), and internal to internal (I-I, or trips starting and ending inside the study area):
  - **Table 9** shows the change in study area AM peak hour trips from 2019 to 2040 as derived from the Arlington County Visum model. The growth in E-E through trips is much less significant than the growth in trips starting or ending in the study area, which makes sense intuitively given the significant forecasted growth in population and employment in the study area.
  - **Table 10** shows these same values for the PM peak hour. Again, the growth in E-E through trips is much less significant than the growth in trips starting or ending in the study area.
  - Note that the percent differences in total trips, as well as the various trip types starting or ending in the study area (E-I, I-E, and I-I) are all lower than the 87 percent increase in population and employment in the study area noted in **Table 3**.

Table 10. Change in Study Area[5] Peak Hour Traffic by Trip End Types, 2019-2040, AM Peak Hour

Trip Type	AM				
	Existing (2019)	2040	Difference	% Difference	Annual % Change (Linear)
External to External (E-E) / Through Trips	8,136	8,873	737	9%	0.4%
External to Internal (E-I) / Start Outside Study Area	6,714	9,585	2,871	43%	2.0%
Internal to External (I-E) / End Outside Study Area	2,619	3,600	981	37%	1.8%
Internal to Internal (I-I) / Start and End in Study Area	1,470	2,207	737	50%	2.4%
Total Trips	**18,940**	**24,265**	**5,325**	**28%**	**1.3%**

Table 11. Change in Study Area[5] Peak Hour Traffic by Trip End Types, 2019-2040, PM Peak Hour

Trip Type	PM				
	Existing (2019)	2040	Difference	% Difference	Annual % Change (Linear)
External to External (E-E) / Through Trips	8,826	9,880	1,054	12%	0.6%
External to Internal (E-I) / Start Outside Study Area	3,725	5,441	1,716	46%	2.2%
Internal to External (I-E) / End Outside Study Area	5,665	9,169	3,504	62%	2.9%
Internal to Internal (I-I) / Start and End in Study Area	1,109	1,780	671	60%	2.9%
Total Trips	**19,326**	**26,270**	**6,944**	**36%**	**1.7%**

[5] In this case, "Study Area" refers to the Arlington County PDSP study area contained within the County's Visum models. This study area extends beyond the Route 1 Multimodal study corridor and includes the area shown in **Figure 2**.

Existing AM Peak Hour Vehicle Turning Movement Counts

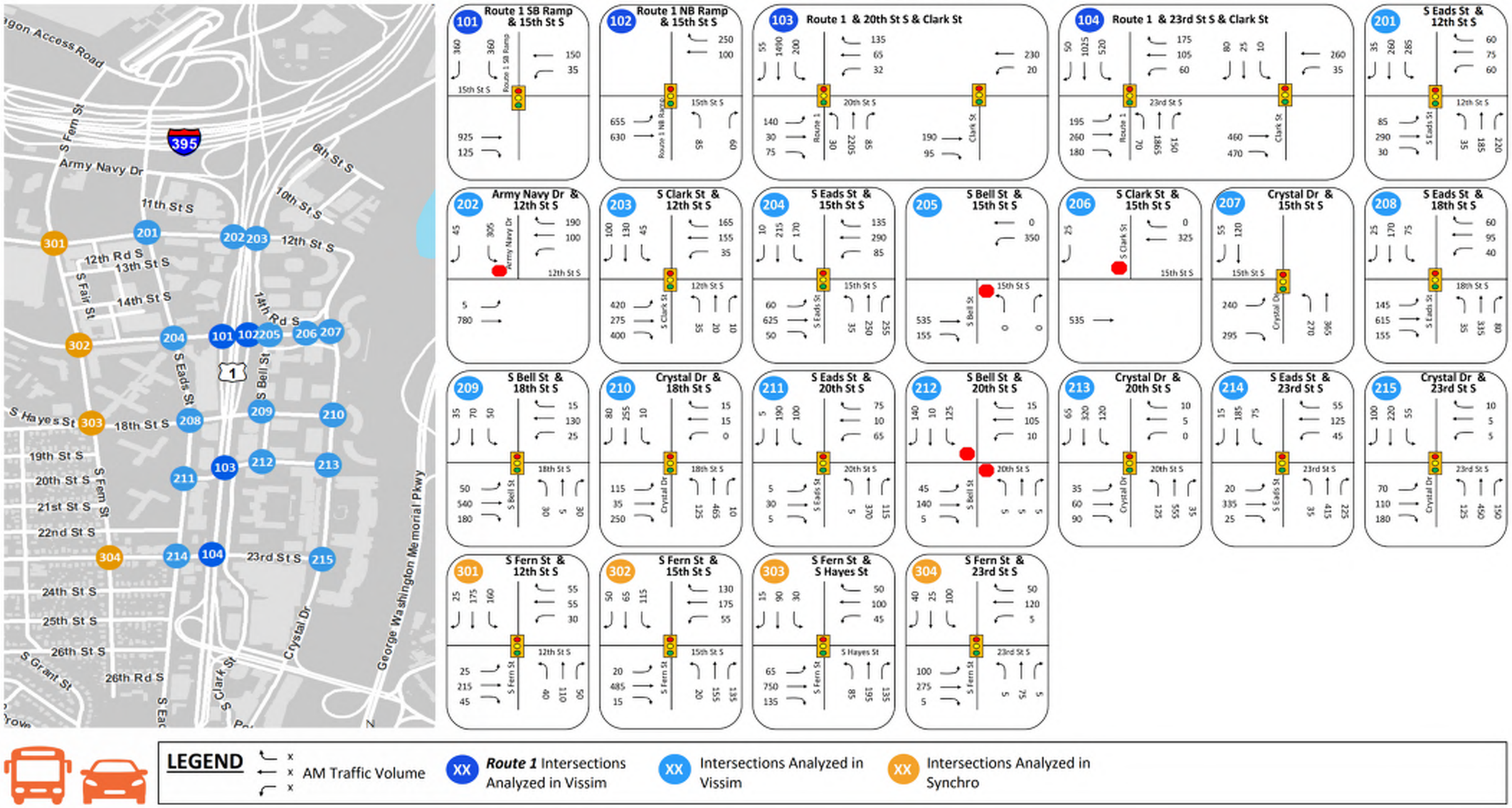


Figure 7. Existing (2019) AM Peak Hour Vehicle Turning Movement Volumes

Existing PM Peak Hour Vehicle Turning Movement Counts

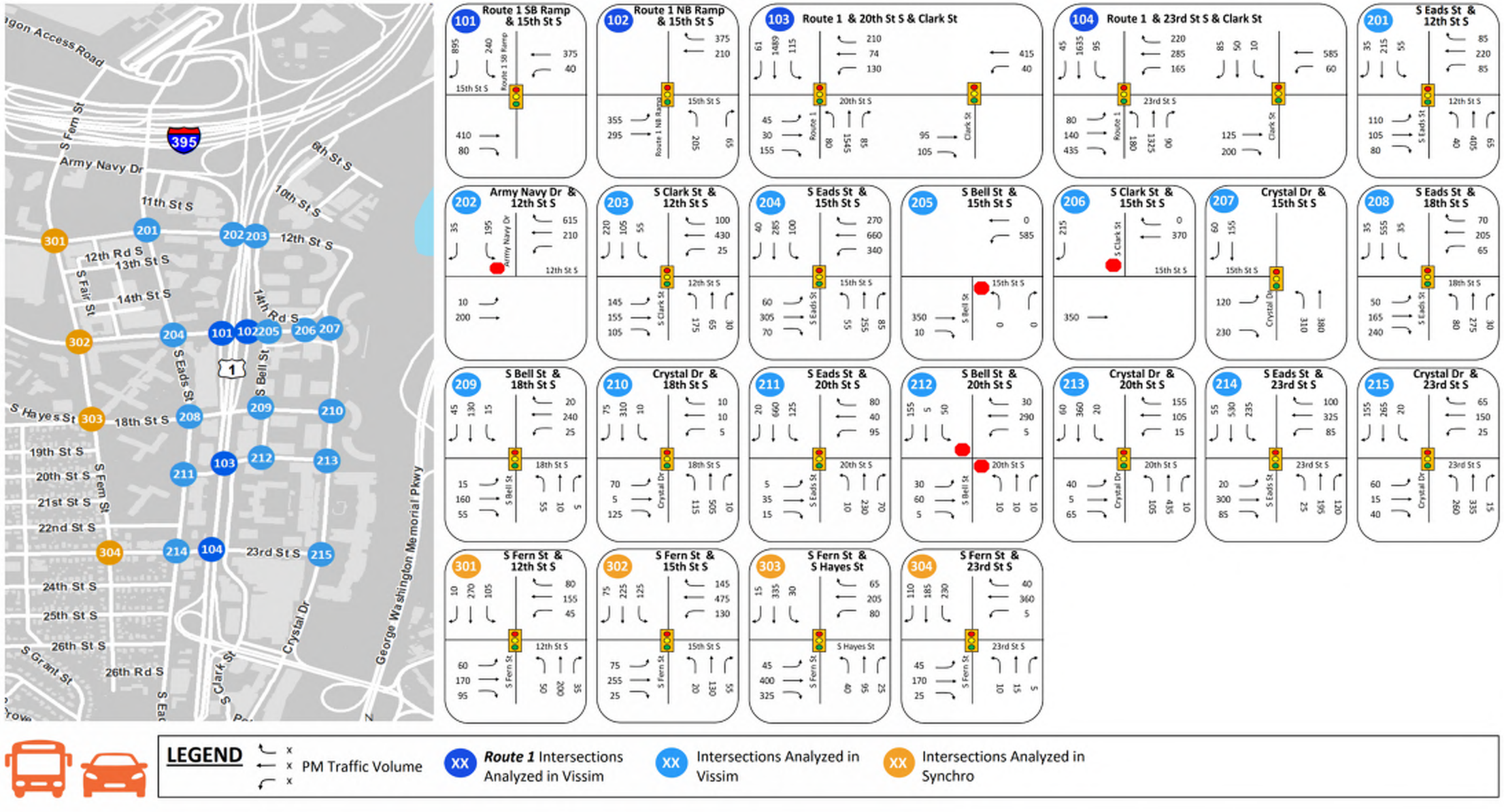


Figure 8. Existing (2019) PM Peak Hour Vehicle Turning Movement Volumes

2025 No Build AM Peak Hour Vehicle Turning Movement Counts

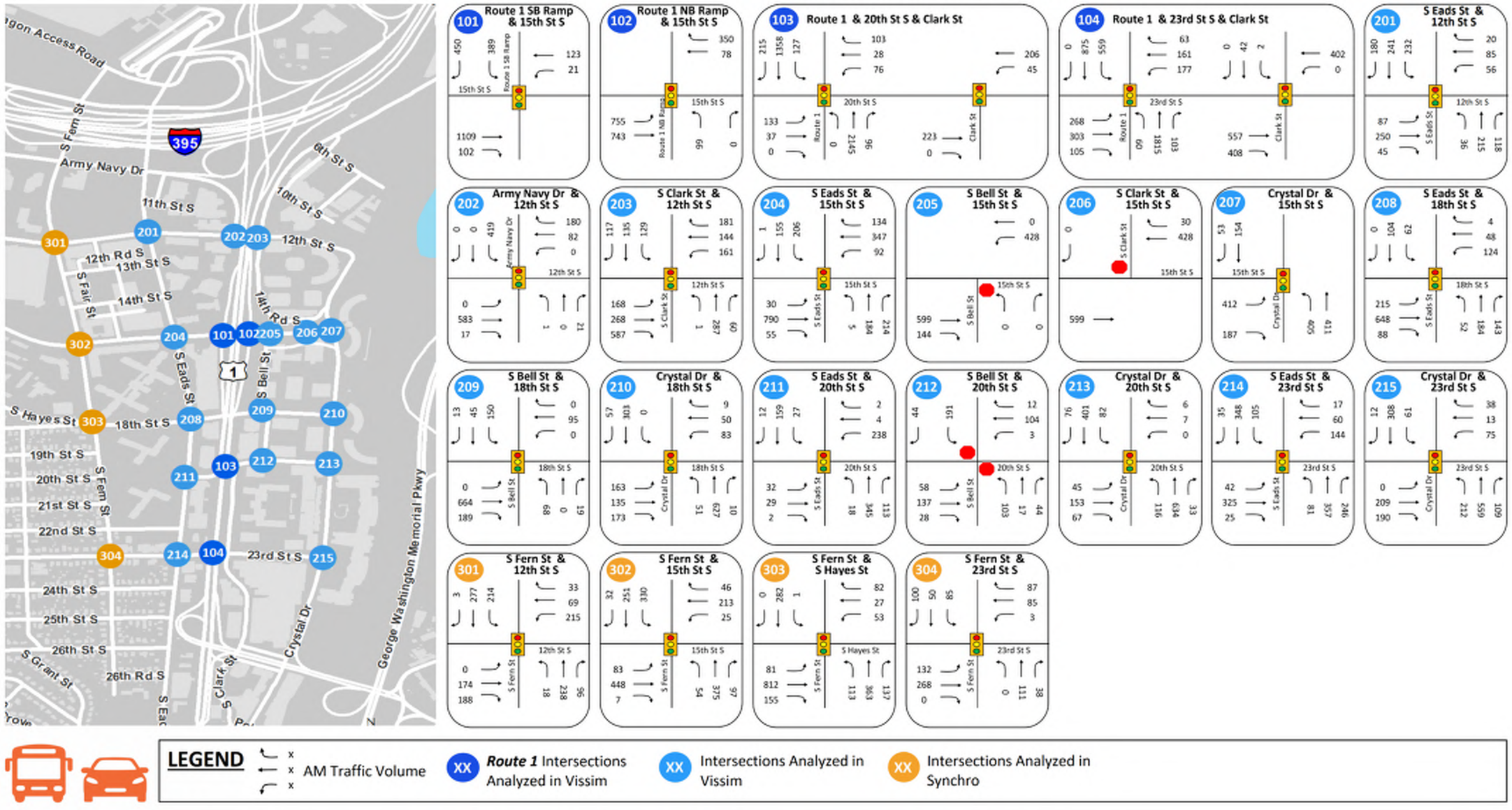


Figure 9. 2025 No-Build AM Peak Hour Vehicle Turning Movement Forecasts

2025 No Build PM Peak Hour Vehicle Turning Movement Counts

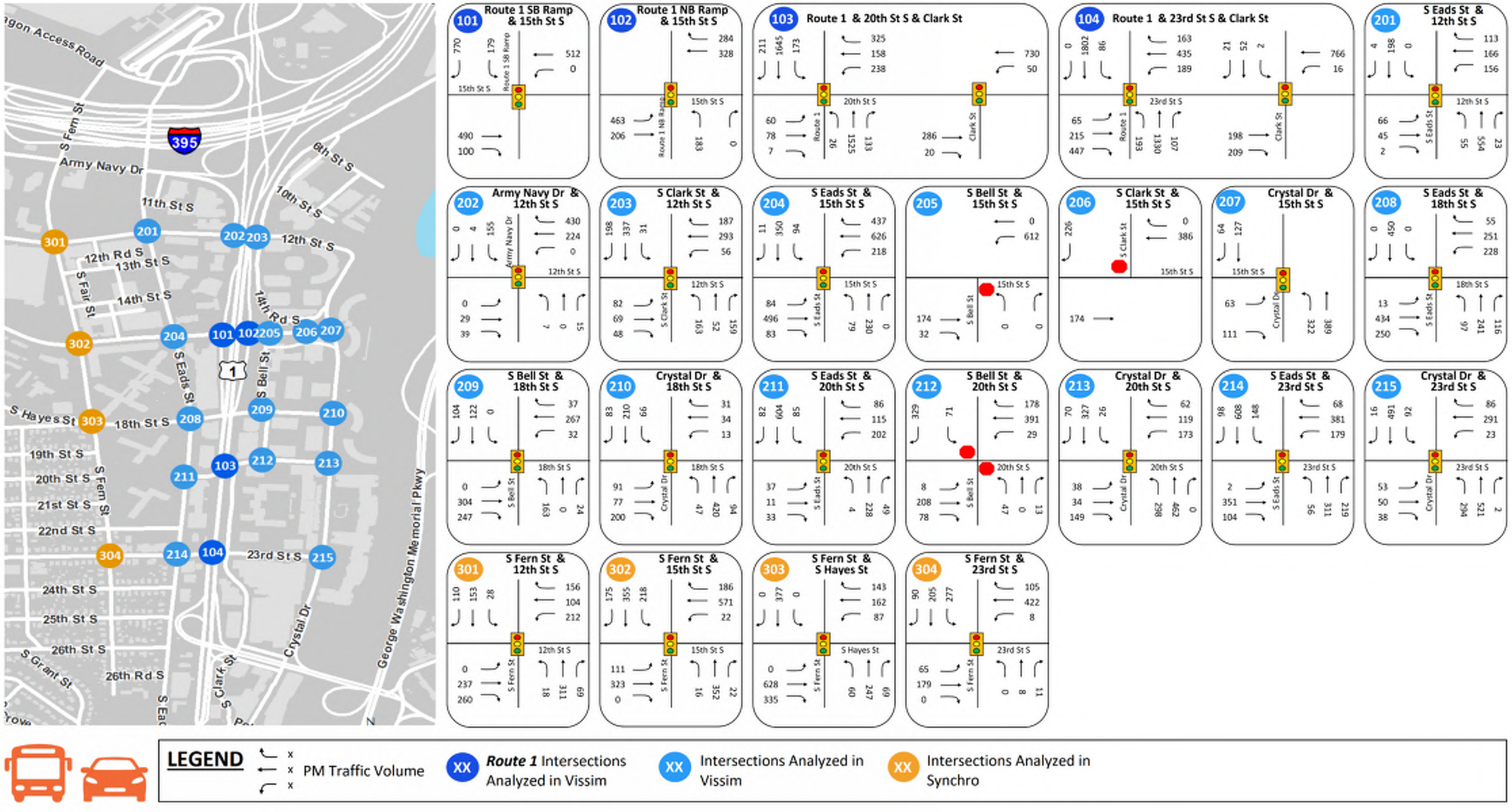


Figure 10. 2025 No-Build PM Peak Hour Vehicle Turning Movement Forecasts

2040 No Build AM Peak Hour Vehicle Turning Movement Counts

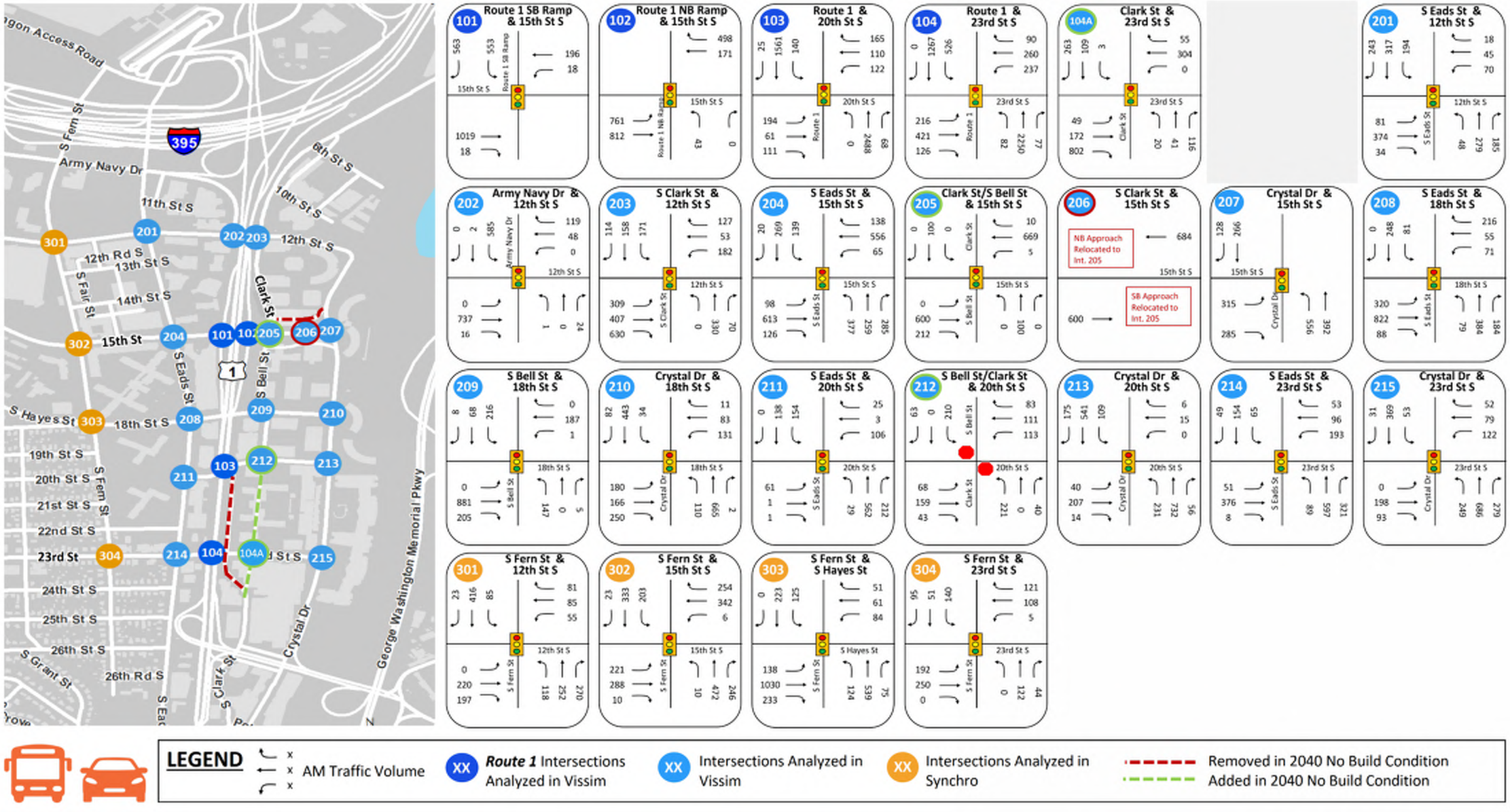


Figure 11. 2040 No-Build AM Peak Hour Vehicle Turning Movement Forecasts

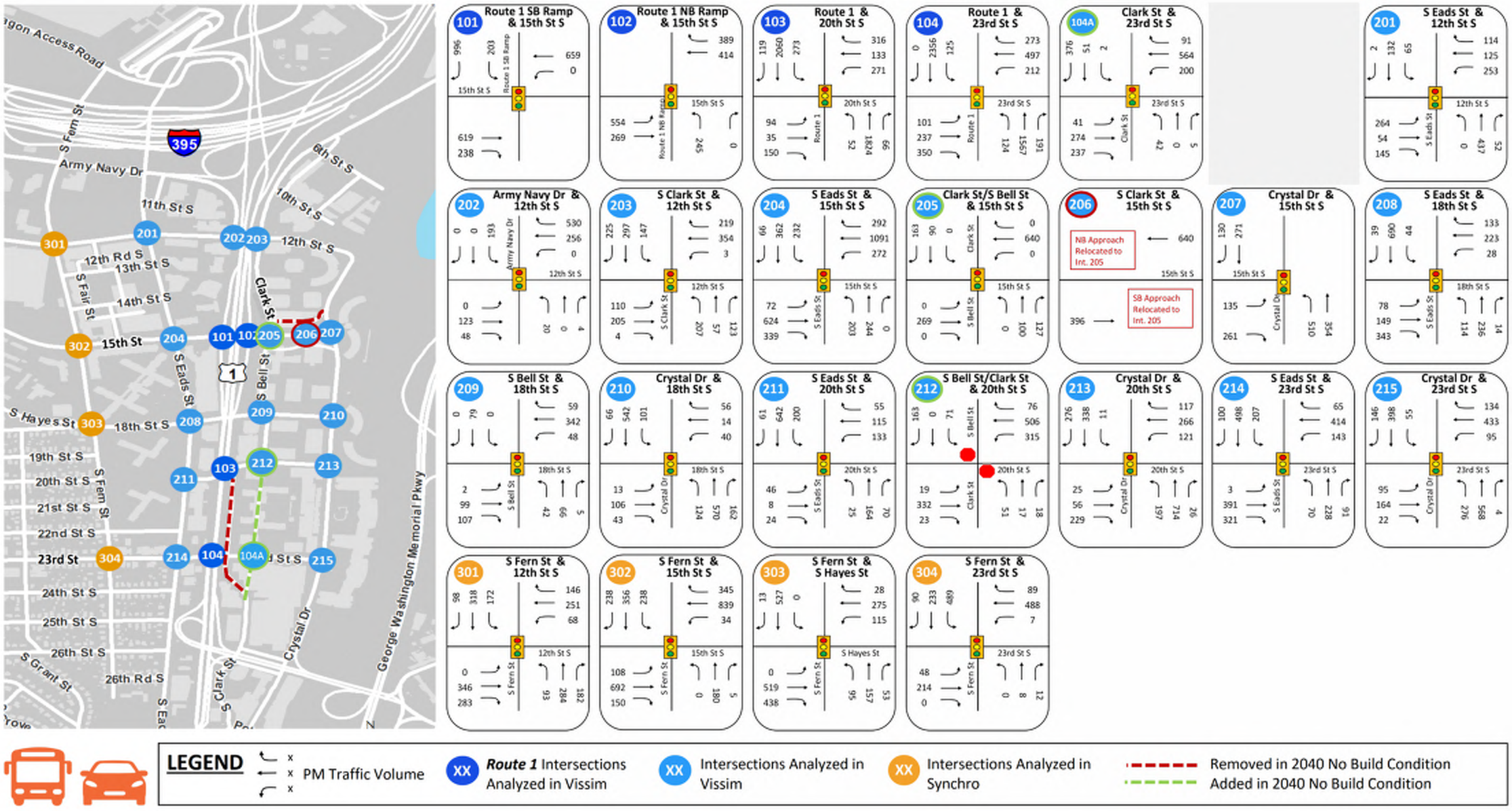


Figure 12. 2040 No-Build PM Peak Hour Vehicle Turning Movement Forecasts

Appendix B
AM Existing and No-Build Models Comparison

Approach LOS* and Delay Comparison by Cross Street

AM Peak Hour

**Reported level of service from Vissim is not calculated with passenger car equivalents; thus, the LOS is not representative of HCM LOS.*

Coloring represents estimated Approach level of service (LOS). Green represents LOS A-C, Yellow represents LOS D, Orange represents LOS E, Red represents LOS F.

Approach Delay Reported in seconds per vehicle

#	Approach	Approach	Existing		2025 No Build		2040 No Build	
			Approach	Approach	Approach	Approach	Approach	Approach
204	15th Street and Eads Street (Signalized)	NB	B (12.6)	B (18.9)	B (15.0)	D (43.1)	C (31.7)	D (40.1)
		SB	C (21.8)		E (57.6)		D (54.0)	
		EB	C (23.9)		E (61.6)		D (52.5)	
		WB	B (15.8)		C (25.0)		C (28.0)	
101	15th Street and Route 1 Southbound Ramp (Signalized)	NB	- (-)	C (29.4)	- (-)	C (23.0)	- (-)	D (35.4)
		SB	C (33.1)		C (26.4)		D (48.6)	
		EB	C (30.2)		C (23.0)		C (26.4)	
		WB	A (9.4)		A (4.8)		A (8.6)	
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	C (27.7)	B (13.3)	C (29.9)	A (7.4)	C (27.7)	C (22.1)
		SB	- (-)		- (-)		- (-)	
		EB	B (12.3)		A (3.8)		C (26.9)	
		WB	B (11.8)		B (16.2)		A (9.7)	
205	15th Street and Bell Street (Unsignalized) | *2040 - Intersection becomes signalized*	NB	- (-)	A (1.8)	- (-)	A (5.2)	C (30.1)	B (17.2)
		SB	- (-)		- (-)		C (32.1)	
		EB	A (1.1)		A (1.4)		A (4.5)	
		WB	A (3.4)		B (11.5)		C (28.9)	
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	NB	- (-)	A (4.1)	- (-)	A (8.6)	- (-)	A (8.1)
		SB	A (1.0)		- (-)		- (-)	
		EB	A (6.6)		B (14.7)		A (7.3)	
		WB	A (0.3)		A (0.3)		A (8.8)	
207	15th Street and Crystal Dr (Signalized)	NB	A (9.0)	B (12.5)	C (20.8)	B (19.0)	A (9.8)	B (17.3)
		SB	B (14.8)		C (21.2)		C (22.2)	
		EB	B (16.1)		B (15.9)		C (26.1)	
		WB	- (-)		- (-)		- (-)	

Approach LOS* and Delay Comparison by Cross Street

AM Peak Hour

**Reported level of service from Vissim is not calculated with passenger car equivalents; thus, the LOS is not representative of HCM LOS.*

Coloring represents estimated Approach level of service (LOS). Green represents LOS A-C, Yellow represents LOS D, Orange represents LOS E, Red represents LOS F.

Approach Delay Reported in seconds per vehicle

#	Approach	Approach	Existing		2025 No Build		2040 No Build	
			Approach	Approach	Approach	Approach	Approach	Approach
208	18th Street and Eads Street (Signalized)	NB	B (16.3)	B (19.5)	B (17.1)	C (21.2)	C (22.5)	D (43.3)
		SB	B (15.5)		B (12.6)		B (10.8)	
		EB	C (21.3)		C (21.7)		E (64.1)	
		WB	C (23.4)		C (34.2)		D (35.8)	
209	18th Street and Bell Street (Signalized)	NB	C (23.9)	B (15.9)	C (26.8)	B (17.7)	D (35.4)	C (29.1)
		SB	B (20.0)		C (28.5)		D (51.6)	
		EB	B (15.0)		B (14.9)		C (25.5)	
		WB	B (12.4)		A (9.7)		A (7.5)	
210	18th Street and Crystal Dr (Signalized)	NB	B (13.2)	B (12.0)	A (8.6)	B (17.0)	C (23.4)	C (28.9)
		SB	B (10.9)		A (4.9)		C (20.2)	
		EB	B (10.9)		C (31.1)		D (36.3)	
		WB	B (14.5)		D (42.2)		D (47.6)	

Approach LOS* and Delay Comparison by Cross Street

AM Peak Hour

**Reported level of service from Vissim is not calculated with passenger car equivalents; thus, the LOS is not representative of HCM LOS.*

Coloring represents estimated Approach level of service (LOS). Green represents LOS A-C, Yellow represents LOS D, Orange represents LOS E, Red represents LOS F.

Approach Delay Reported in seconds per vehicle

#	Approach	Approach	Existing		2025 No Build		2040 No Build	
			Approach	Approach	Approach	Approach	Approach	Approach
211	20th Street and Eads Street (Signalized)	NB	A (7.5)	B (12.5)	A (3.9)	B (12.5)	B (15.2)	B (17.8)
		SB	B (18.6)		B (12.2)		B (18.4)	
		EB	C (23.5)		B (18.8)		C (26.5)	
		WB	B (13.1)		C (25.6)		C (25.9)	
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	NB	A (3.3)	B (19.7)	A (2.4)	B (13.5)		
		SB	D (38.0)		C (23.2)			
		EB	- (-)		- (-)			
		WB	D (51.9)		E (72.4)			
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Porition) | *2040 - Clark Street Aligned with Bell Street*	NB	B (16.8)	B (13.5)	A (6.0)	A (7.0)	B (13.1)	C (21.1)
		SB	A (1.2)		A (1.1)		C (24.4)	
		EB	E (71.1)		F (87.4)		D (45.7)	
		WB	- (-)		- (-)		D (38.0)	
103		Total		B (16.7)		B (10.3)		
212	20th Street and Bell Street (Unsignalized) | *2040 - Clark Street Aligned with Bell Street*	NB	A (9.7)	A (6.7)	B (14.3)	A (8.9)	C (24.0)	B (13.5)
		SB	B (10.4)		B (13.1)		C (19.6)	
		EB	A (3.1)		A (2.2)		A (4.3)	
		WB	A (3.4)		A (5.6)		A (6.1)	
213	20th Street and Crystal Dr (Signalized)	NB	B (10.5)	B (14.5)	B (10.6)	B (14.1)	B (13.4)	B (18.3)
		SB	B (19.7)		B (15.1)		C (22.0)	
		EB	B (16.3)		C (22.7)		C (25.6)	
		WB	B (11.5)		B (14.3)		B (18.9)	

Approach LOS* and Delay Comparison by Cross Street

AM Peak Hour

**Reported level of service from Vissim is not calculated with passenger car equivalents; thus, the LOS is not representative of HCM LOS.*

Coloring represents estimated Approach level of service (LOS). Green represents LOS A-C, Yellow represents LOS D, Orange represents LOS E, Red represents LOS F.

Approach Delay Reported in seconds per vehicle

#	Approach	Approach	Existing		2025 No Build		2040 No Build	
			Approach	Approach	Approach	Approach	Approach	Approach
201	12th Street and Eads Street (Signalized)	NB	B (14.3)	C (25.9)	B (12.3)	D (37.6)	B (13.4)	E (56.2)
		SB	C (20.2)		C (27.5)		C (30.0)	
		EB	D (41.8)		E (74.5)		F (152.5)	
		WB	D (36.0)		D (49.7)		D (52.6)	
202	12th Street and Army Navy Dr (Unsignalized) | *2025 - Intersection becomes signalized*	NB	C (19.8)	D (46.7)	E (64.8)	F (98.4)	F (185.2)	F (158.1)
		SB	F (201.5)		F (285.0)		F (389.3)	
		EB	A (2.9)		C (24.3)		C (30.4)	
		WB	A (1.0)		A (8.1)		A (9.7)	
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	C (24.0)	B (13.8)	D (38.9)	D (46.8)	D (42.7)	D (51.5)
		SB	B (17.2)		F (211.8)		F (276.5)	
		EB	B (11.6)		B (12.1)		B (16.1)	
		WB	B (15.9)		D (36.3)		D (53.8)	
214	23rd Street and Eads Street (Signalized)	NB	E (66.1)	E (77.5)	F (119.3)	F (83.5)	E (73.6)	F (117.5)
		SB	D (37.2)		C (32.5)		C (29.2)	
		EB	F (165.4)		F (136.0)		F (462.3)	
		WB	B (13.4)		C (22.1)		D (41.4)	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	- (-)	C (23.2)	- (-)	C (22.4)		
		SB	F (130.4)		F (141.8)			
		EB	A (0.3)		A (0.3)			
		WB	D (52.5)		E (57.3)			
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	F (216.1)	F (111.4)	E (72.3)	D (53.2)	F (165.1)	F (110.4)
		SB	B (19.6)		C (22.9)		D (42.8)	
		EB	D (41.5)		D (50.4)		D (47.3)	
		WB	A (2.8)		A (6.3)		D (54.5)	
104		Total		F (140.1)		E (58.8)		
104A	23rd Street and Clark Street (Signalized) | *2040 - Clark Street Realigned to the East, separated from 104 East/West*	NB					C (28.5)	B (17.2)
		SB					C (26.8)	
		EB					B (12.2)	
		WB					B (12.9)	
215	23rd Street and Crystal Drive (Signalized)	NB	D (37.3)	C (31.9)	C (20.1)	B (18.7)	F (94.8)	E (61.1)
		SB	C (26.1)		B (11.8)		A (9.2)	
		EB	C (27.5)		C (20.1)		C (28.9)	
		WB	C (24.6)		C (25.0)		D (39.0)	

**Results show the average from 10 simulation runs.*

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Intersection Throughput Comparison

AM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
101	15th Street and Route 1 Southbound Ramp (Signalized)	SB	SBL	363	719	397	837	**548**	**1,095**
			SBR	356		**440**		**547**	
		EB	EBT	911	1,028	**1,060**	**1,156**	962	980
			EBR	117		**96**		**18**	
		WB	WBL	32	167	**21**	158	**16**	**208**
			WBT	135		137		**192**	
		Intersection		**1,914**		**2,151**		**2,283**	
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	NBL	68	121	**61**	**61**	**42**	**42**
			NBT	0		0		0	
			NBR	53		0		0	
		EB	EBL	636	1,277	**706**	**1,456**	**707**	**1,503**
			EBT	641		**750**		**796**	
			EBR	0		0		0	
		WB	WBL	0	338	0	**451**	0	**600**
			WBT	99		97		**166**	
			WBR	239		**354**		**434**	
		Intersection		1,736		**1,968**		**2,145**	

Intersection Throughput Comparison

AM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	NB	NBT	2,118	2,190	2,318	2,403		
			NBR-20th St	48		**85**			
			NBR-Clark	24		0			
		SB	SBL-20th	133	1,648	122	**1,420**		
			SBL-Clark	65		0			
			SBT	1,450		**1,298**			
		WB	WBL-Route 1	31	179	**72**	**219**		
			WBL-Clark	20		**52**			
			WBR-Route 1	128		**95**			
		Intersection		4,017		4,042			
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Portion) | *2040 - Clark Street Aligned with Bell Street*	NB	NBL	27	2,063	0	2,260	0	**2,418**
			NBT	2,036		**2,260**		**2,358**	
			NBR	0		0		60	
		SB	SBL	0	1,603	0	1,598	133	1,648
			SBT	1,483		1,370		1,492	
			SBR	120		**228**		**23**	
		EB	EBL	157	226	146	**146**	166	**315**
			EBT	0		0		51	
			EBR	69		0		**98**	
		WB	WBL					114	366
			WBT					99	
			WBR					153	
		Intersection		3,892		4,004		**4,747**	

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Intersection Throughput Comparison

AM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	NBL	0	0	0	0		
			NBT	0		0			
			NBR	0		0			
		SB	SBL	8	112	2	55		
			SBT	28		49			
			SBR	76		4			
		EB	EBT	437	890	523	911		
			EBR	453		388			
		WB	WBL	33	286	0	389		
			WBT	78		326			
			WBR	175		63			
		Intersection		1,288		1,355			
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	NBL	50	1,754	56	2,123	63	2,129
			NBT	1,583		1,962		2,003	
			NBR	121		105		63	
		SB	SBL	517	1,553	537	1,370	498	1,691
			SBT	990		833		1,193	
			SBR	46		0		0	
		EB	EBL	185	602	230	586	141	510
			EBT	241		268		285	
			EBR	176		88		84	
		EB	EBL	55	329	171	394	217	552
			EBT	99		160		244	
			EBR	175		63		91	
		Intersection		3,909		4,079		4,330	
104A	23rd Street and Clark Street (Signalized) | *2040 - Clark Street Realigned to the East, separated from 104 East/West*	NB	NBL					19	174
			NBT					42	
			NBR					113	
		SB	SBL					3	370
			SBT					104	
			SBR					263	
		EB	EBL					36	845
			EBT					160	
			EBR					649	
		WB	WBT					272	326
			WBR					54	
		Intersection						1,715	

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Intersection Throughput Comparison

AM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
201	12th Street and Eads Street (Signalized)	NB	NBL	33	433	34	362	**43**	468
			NBT	187		**211**		**258**	
			NBR	213		**117**		**167**	
		SB	SBL	282	580	**222**	647	**184**	743
			SBT	260		247		**315**	
			SBR	38		**178**		**244**	
		EB	EBL	82	405	84	375	**69**	414
			EBT	285		**248**		312	
			EBR	38		**43**		**33**	
		WB	WBL	59	192	**52**	151	61	115
			WBT	73		**81**		**38**	
			WBR	60		**18**		**16**	
		Intersection		1,610		1,535		1,740	
202	12th Street and Army Navy Dr (Unsignalized) | *2025 - Intersection becomes signalized*	NB	NBL	0	15	1	21	1	21
			NBT	6		**0**		**0**	
			NBR	9		**20**		**20**	
		SB	SBL	266	310	**351**	351	**445**	445
			SBR	44		**0**		**0**	
		EB	EBL	4	789	**0**	601	**0**	689
			EBT	776		**586**		**675**	
			EBR	9		**15**		**14**	
		WB	WBT	100	284	**71**	224	**30**	104
			WBR	184		**153**		**74**	
		Intersection		1,398		**1,197**		1,259	

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Intersection Throughput Comparison

AM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	NBL	36	66	**1**	**341**	0	**389**
			NBT	20		**283**		**321**	
			NBR	10		**57**		**68**	
		SB	SBL	47	274	**84**	249	**74**	**194**
			SBT	124		**86**		**67**	
			SBR	103		**79**		**53**	
		EB	EBL	402	1,047	**157**	957	**263**	**1,161**
			EBT	261		249		**344**	
			EBR	384		**551**		**554**	
		WB	WBL	37	343	**163**	**489**	**167**	337
			WBT	146		147		**52**	
			WBR	160		**179**		**118**	
		Intersection		1,730		**2,036**		**2,081**	
204	15th Street and Eads Street (Signalized)	NB	NBL	40	519	**6**	**375**	**342**	**828**
			NBT	239		**171**		228	
			NBR	240		**198**		258	
		SB	SBL	173	401	**202**	**356**	**138**	425
			SBT	214		**148**		**265**	
			SBR	14		**6**		**22**	
		EB	EBL	66	733	**31**	**846**	**98**	**811**
			EBT	616		**757**		589	
			EBR	51		**58**		**124**	
		WB	WBL	79	489	**87**	**575**	**58**	**736**
			WBT	280		**359**		**549**	
			WBR	130		129		129	
		Intersection		2,142		2,152		**2,800**	
205	15th Street and Bell Street (Unsignalized) | *2040 - Intersection becomes signalized*	NB	NBT	0	0	0	0	96	96
		SB	SBT	0	0	0	0	106	106
		EB	EBT	525	681	**600**	744	**580**	**790**
			EBR	156		144		**210**	
		WB	WBL	0	341	0	**452**	5	**616**
			WBT	341		**452**		**601**	
			WBR	0		0		10	
		Intersection		1,022		**1,196**		**1,608**	

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Intersection Throughput Comparison

AM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	SB	SBR	24	24	0	0	0	0
		EB	EBT	525	525	**597**	**597**	**578**	**578**
		WB	WBT	319	319	**439**	**439**	**603**	**603**
		Intersection		868		**1,036**		**1,181**	
207	15th Street and Crystal Dr (Signalized)	NB	NBL	269	635	**394**	**803**	**505**	**870**
			NBT	366		**409**		365	
		SB	SBT	120	171	**137**	183	**207**	**308**
			SBR	51		46		**101**	
		EB	EBL	232	525	**415**	**596**	**298**	575
			EBR	293		**181**		277	
		Intersection		1,331		**1,582**		**1,753**	
208	18th Street and Eads Street (Signalized)	NB	NBL	33	421	**44**	**314**	**64**	**533**
			NBT	314		**155**		322	
			NBR	74		**115**		**147**	
		SB	SBL	75	262	**63**	**158**	80	**322**
			SBT	163		**95**		**242**	
			SBR	24		0		0	
		EB	EBL	145	896	**214**	938	**300**	**1,144**
			EBT	602		639		**763**	
			EBR	149		**85**		**81**	
		WB	WBL	40	192	**119**	**169**	**63**	**309**
			WBT	96		**47**		**48**	
			WBR	56		**3**		**198**	
		Intersection		1,771		**1,579**		**2,308**	

Intersection Throughput Comparison

AM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
209	18th Street and Bell Street (Signalized)	NB	NBL	35	68	**66**	**84**	**129**	**134**
			NBT	5		**0**		**0**	
			NBR	28		**18**		**5**	
		SB	SBL	57	163	**158**	**216**	**215**	**292**
			SBT	72		**44**		69	
			SBR	34		**14**		**8**	
		EB	EBL	51	758	**0**	822	**0**	**1,021**
			EBT	532		**640**		**826**	
			EBR	175		182		**195**	
		WB	WBL	26	165	**0**	**91**	**1**	174
			WBT	124		**91**		**173**	
			WBR	15		**0**		**0**	
		Intersection		1,154		1,213		**1,621**	
210	18th Street and Crystal Dr (Signalized)	NB	NBL	122	591	**51**	**679**	**101**	**699**
			NBT	460		**619**		**597**	
			NBR	9		9		**1**	
		SB	SBL	9	343	**0**	344	**29**	**500**
			SBT	254		**288**		**398**	
			SBR	80		**56**		73	
		EB	EBL	111	400	**153**	**446**	**170**	**553**
			EBT	36		**128**		**153**	
			EBR	253		**165**		230	
		WB	WBL	0	30	81	**140**	130	**219**
			WBT	15		**51**		**79**	
			WBR	15		**8**		**10**	
		Intersection		1,364		**1,609**		**1,971**	

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Intersection Throughput Comparison

AM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
211	20th Street and Eads Street (Signalized)	NB	NBL	7	457	**14**	**387**	**25**	**648**
			NBT	341		**279**		**452**	
			NBR	109		**94**		**171**	
		SB	SBL	94	285	**28**	**191**	**144**	279
			SBT	186		**151**		**135**	
			SBR	5		**12**		0	
		EB	EBL	5	40	**35**	**63**	**61**	**63**
			EBT	30		**26**		**1**	
			EBR	5		**2**		**1**	
		WB	WBL	62	147	**221**	**227**	**97**	**122**
			WBT	10		**4**		**3**	
			WBR	75		**2**		**22**	
		Intersection		929		868		**1,112**	
212	20th Street and Bell Street (Unsignalized) | *2040 - Clark Street Aligned with Bell Street*	NB	NBL	4	15	**95**	**153**	**210**	**249**
			NBT	5		**17**		0	
			NBR	6		**41**		**39**	
		SB	SBL	123	277	**185**	**232**	**204**	271
			SBT	11		0		**9**	
			SBR	143		**47**		**58**	
		EB	EBL	41	181	**52**	**207**	**60**	**242**
			EBT	136		129		143	
			EBR	4		**26**		**39**	
		WB	WBL	9	138	**3**	**123**	**104**	**281**
			WBT	106		107		102	
			WBR	23		**13**		**75**	
		Intersection		611		**715**		**1,043**	

Intersection Throughput Comparison

AM Peak Hour

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** Green represents an increase greater than 10%. Orange represents a decrease greater than 10%. Red represents no forecasted volume.*

#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
213	20th Street and Crystal Dr (Signalized)	NB	NBL	123	712	118	793	**203**	918
			NBT	557		**645**		**668**	
			NBR	32		30		**47**	
		SB	SBL	113	503	**75**	535	**97**	755
			SBT	318		**379**		**491**	
			SBR	72		**81**		**167**	
		EB	EBL	32	181	**41**	257	**37**	246
			EBT	58		**148**		**196**	
			EBR	91		**68**		**13**	
		WB	WBT	5	15	**8**	**13**	**15**	**21**
			WBR	10		**5**		**6**	
		Intersection		1,411		**1,598**		**1,940**	
214	23rd Street and Eads Street (Signalized)	NB	NBL	33	626	**55**	**478**	**66**	**741**
			NBT	384		**253**		**443**	
			NBR	209		**170**		**232**	
		SB	SBL	76	267	**100**	**456**	**63**	254
			SBT	175		**321**		**145**	
			SBR	16		**35**		**46**	
		EB	EBL	19	351	**41**	370	**33**	**228**
			EBT	307		303		**190**	
			EBR	25		26		**5**	
		WB	WBL	40	203	**135**	216	**171**	**310**
			WBT	116		**63**		**88**	
			WBR	47		**18**		51	
		Intersection		1,447		1,520		1,533	

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Intersection Throughput Comparison

AM Peak Hour

** Throughput differences greater than 10% from existing are shown with bold text and color.*

** Green represents an increase greater than 10%. Orange represents a decrease greater than 10%. Red represents no forecasted volume.*

#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
215	23rd Street and Crystal Drive (Signalized)	NB	NBL	120	707	**205**	**881**	**213**	**1,059**
			NBT	449		**571**		**612**	
			NBR	138		**105**		**234**	
		SB	SBL	53	369	57	362	**47**	**410**
			SBT	215		**290**		**330**	
			SBR	101		**15**		**33**	
		EB	EBL	70	351	**5**	381	**2**	**275**
			EBT	107		**197**		**181**	
			EBR	174		179		**92**	
		WB	WBL	6	21	**76**	**125**	**123**	**251**
			WBT	5		**12**		**76**	
			WBR	10		**37**		**52**	
		Intersection		1,448		**1,749**		**1,995**	

**Results show the average from 10 simulation runs.*

Intersection Queue Comparison

AM Peak Hour

** **Red** represents a queue increase greater than 20% over existing. **Green** represents a queue decrease greater than 20% over existing.*

Intersection		Approach	Existing		2025 No Build		2040 No Build	
			Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)
101	15th Street and Route 1 Southbound Ramp (Signalized)	NB	0	0	0	0	0	0
		SB	67	302	56	232	193	901
		EB	88	419	83	399	65	366
		WB	8	79	3	55	5	81
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	12	125	8	102	5	76
		SB	0	0	0	0	0	0
		EB	126	278	27	258	157	320
		WB	18	149	55	183	33	153
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	NB	34	216	27	197		
		SB	169	547	94	341		
		EB	0	0	0	0		
		WB	44	244	58	246		
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Porition) | *2040 - Clark Street Aligned with Bell Street*	NB	89	769	20	147	63	368
		SB	3	160	3	179	101	348
		EB	79	265	56	253	61	245
		WB	0	0	0	0	55	223
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	0	0	0	0		
		SB	79	212	50	191		
		EB	1	128	1	110		
		WB	60	284	74	254		
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	1232	1675	414	1062	1312	1844
		SB	84	452	77	323	185	590
		EB	134	275	185	284	170	271
		EB	3	115	10	108	142	360
		WB	0	0	0	0	0	0
104A	23rd Street and Clark Street (Signalized) | *2040 - Clark Street Realigned to the East, separated from 104 East/West*	NB					27	198
		SB					42	261
		EB					64	392
		WB					10	171
201	12th Street and Eads Street (Signalized)	NB	22	235	16	209	23	260
		SB	69	494	120	658	160	764
		EB	97	490	161	552	456	643
		WB	35	176	46	169	39	155

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Intersection Queue Comparison

AM Peak Hour

** **Red** represents a queue increase greater than 20% over existing. **Green** represents a queue decrease greater than 20% over existing.*

Intersection		Approach	Existing		2025 No Build		2040 No Build	
			Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)
202	12th Street and Army Navy Dr (Unsignalized) | *2025 - Intersection becomes signalized*	NB	1	53	7	65	26	110
		SB	437	853	499	1008	821	1094
		EB	14	284	60	254	85	256
		WB	0	87	11	126	6	112
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	4	72	82	397	107	441
		SB	21	157	383	500	416	485
		EB	52	271	44	236	85	237
		WB	30	256	75	293	68	278
204	15th Street and Eads Street (Signalized)	NB	24	271	22	212	153	563
		SB	30	197	75	235	85	266
		EB	66	402	313	899	232	747
		WB	22	163	41	217	65	259
205	15th Street and Bell Street (Unsignalized) | *2040 - Intersection becomes signalized*	NB	0	0	0	0	14	140
		SB	0	0	0	0	18	152
		EB	1	178	1	146	13	159
		WB	0	50	2	71	120	317
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	NB	0	0	0	0	0	0
		SB	0	11	0	0	0	0
		EB	0	51	8	189	5	175
		WB	0	135	1	178	15	210
207	15th Street and Crystal Dr (Signalized)	NB	17	205	60	334	26	229
		SB	10	151	16	157	30	317
		EB	46	204	77	207	82	262
		WB	0	0	0	0	0	0
208	18th Street and Eads Street (Signalized)	NB	33	279	16	206	61	326
		SB	16	178	6	127	11	152
		EB	45	269	52	282	289	668
		WB	13	107	20	127	40	187

Kimley»Horn

Intersection Queue Comparison

AM Peak Hour

** **Red** represents a queue increase greater than 20% over existing. **Green** represents a queue decrease greater than 20% over existing.*

Intersection		Approach	Existing		2025 No Build		2040 No Build	
			Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)
209	18th Street and Bell Street (Signalized)	NB	8	114	8	112	21	163
		SB	15	135	26	189	82	417
		EB	40	325	49	389	112	528
		WB	6	97	4	65	5	72
210	18th Street and Crystal Dr (Signalized)	NB	31	263	24	377	84	482
		SB	20	151	7	167	63	226
		EB	18	156	92	304	123	316
		WB	1	43	31	212	60	258
211	20th Street and Eads Street (Signalized)	NB	12	302	3	130	50	500
		SB	25	220	9	161	20	165
		EB	4	63	5	69	7	77
		WB	9	89	29	189	13	147
212	20th Street and Bell Street (Unsignalized) | *2040 - Clark Street Aligned with Bell Street*	NB	1	82	15	99	32	204
		SB	23	142	19	142	32	175
		EB	2	166	1	64	6	132
		WB	1	107	2	128	4	97
213	20th Street and Crystal Dr (Signalized)	NB	40	194	64	219	73	220
		SB	27	305	21	255	71	496
		EB	12	142	29	205	32	213
		WB	1	35	1	29	2	51
214	23rd Street and Eads Street (Signalized)	NB	233	496	338	495	325	503
		SB	36	250	59	330	19	156
		EB	395	951	299	800	811	1011
		WB	9	97	17	142	55	241
215	23rd Street and Crystal Drive (Signalized)	NB	151	499	91	443	541	1099
		SB	55	307	17	160	16	261
		EB	40	242	41	335	43	262
		WB	2	33	11	104	34	171

**Results show the average from 10 simulation runs.*

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Intersection Pedestrian Throughput

AM Peak Hour

Intersection		Crosswalk Location	Approach	Existing		2025 No Build		2040 No Build	
				Approach	Crosswalk	Approach	Crosswalk	Approach	Crosswalk
101	15th Street and Route 1 Southbound Ramp (Signalized)	North Leg	EB	14	28	74	147	136	272
			WB	14		73		136	
		South Leg	EB	10	20	70	141	131	262
			WB	10		71		131	
		West Leg	NB	1	2	1	2	2	4
			SB	1		1		2	
102	15th Street and Route 1 Northbound Ramp (Signalized)	North Leg	EB	17	34	73	147	136	272
			WB	17		74		136	
		South Leg	EB	39	78	71	142	132	264
			WB	39		71		132	
		East Leg	NB	24	47	31	62	47	95
			SB	23		31		48	
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	North Leg	EB	14	28	17	34		
			WB	14		17			
		East Leg	NB	37	74	49	99		
			SB	37		50			
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Porition) | *2040 - Clark Street Aligned with Bell Street*	South Leg	EB	3	6	4	8	0	0
			WB	3		4		0	
		West Leg	NB	38	75	50	100	77	154
			SB	37		50		77	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	North Leg	EB	70	140	91	182		
			WB	70		91			
		South Leg	EB	49	99	64	129		
			WB	50		65			
		East Leg	NB	51	102	69	137		
			SB	51		68			
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	North Leg	EB	23	46	0	30	46	91
			WB	23		30		45	
		South Leg	EB	50	99	64	129	99	198
			WB	49		65		99	
		East Leg	NB	7	13	9	18	14	28
			SB	6		9		14	
		West Leg	NB	6	12	8	16	12	24
			SB	6		8		12	

**Results show the average from 10 simulation runs.*

Kimley»Horn

Intersection Pedestrian Delay

AM Peak Hour

Delay Reported in seconds per pedestrian

Intersection		Crosswalk Location	Approach	Existing		2025 No Build		2040 No Build	
				Approach	Crosswalk	Approach	Crosswalk	Approach	Crosswalk
101	15th Street and Route 1 Southbound Ramp (Signalized)	North Leg	EB	3.8	4.4	5.1	5.1	5.4	5.3
			WB	5.0		5.2		5.3	
		South Leg	EB	21.3	21.8	26.5	27.2	21.0	21.0
			WB	22.4		27.9		20.9	
		West Leg	NB	128.6	136.5	93.5	97.8	89.6	94.3
			SB	144.5		102.2		99.1	
102	15th Street and Route 1 Northbound Ramp (Signalized)	North Leg	EB	25.9	27.6	35.6	35.9	36.6	36.5
			WB	29.3		36.1		36.4	
		South Leg	EB	4.6	4.8	5.1	5.4	5.0	5.1
			WB	5.0		5.7		5.1	
		East Leg	NB	127.7	123.5	93.4	90.2	88.2	88.6
			SB	119.1		87.1		89.0	
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	North Leg	EB	193.8	201.0	230.6	231.2		
			WB	208.2		231.8			
		East Leg	NB	67.5	52.4	26.9	25.1		
			SB	37.2		23.4			
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Porition) | *2040 - Clark Street Aligned with Bell Street*	South Leg	EB	82.4	65.9	53.2	67.1	-	-
			WB	49.4		80.9		-	
		West Leg	NB	42.7	39.6	52.4	38.4	36.8	34.9
			SB	36.3		24.4		33.1	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	North Leg	EB	56.7	57.7	59.1	59.7		
			WB	58.7		60.3			
		South Leg	EB	115.8	88.2	120.9	90.3		
			WB	61.1		60.3			
		East Leg	NB	191.6	189.5	76.8	121.1		
			SB	187.4		166.0			
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	North Leg	EB	185.3	127.2	-	72.5	192.3	185.9
			WB	69.1		72.5		179.5	
		South Leg	EB	113.0	118.5	158.2	140.7	197.4	192.4
			WB	124.1		123.4		187.4	
		East Leg	NB	193.1	184.4	63.2	110.3	87.6	110.2
			SB	174.3		157.3		132.7	
		West Leg	NB	59.6	52.0	42.8	38.9	34.3	38.5
			SB	44.4		34.9		42.7	

**Results show the average from 10 simulation runs.*

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Appendix C
PM Existing and No-Build Models Comparison

Approach LOS* and Delay Comparison by Cross Street

PM Peak Hour

**Reported level of service from Vissim is not calculated with passenger car equivalents; thus, the LOS is not representative of HCM LOS.*

Coloring represents estimated Approach level of service (LOS). Green represents LOS A-C, Yellow represents LOS D, Orange represents LOS E, Red represents LOS F.

Approach Delay Reported in seconds per vehicle

#	Approach	Approach	Existing		2025 No Build		2040 No Build	
			Approach	Approach	Approach	Approach	Approach	Approach
204	15th Street and Eads Street (Signalized)	NB	C (21.2)	B (19.9)	D (52.3)	C (33.1)	E (78.0)	D (51.5)
		SB	C (22.0)		F (83.7)		F (104.1)	
		EB	B (15.9)		B (19.9)		C (32.6)	
		WB	C (20.2)		B (15.7)		D (36.4)	
1001	15th Street and Route 1 At-Grade (Signalized)	NB						
		SB						
		EB						
		WB						
101	15th Street and Route 1 Southbound Ramp (Signalized)	NB	- (-)	C (29.4)	- (-)	C (25.2)	- (-)	C (28.6)
		SB	D (42.3)		C (31.1)		D (36.4)	
		EB	C (22.8)		C (32.8)		C (31.3)	
		WB	A (2.2)		A (4.0)		B (11.2)	
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	C (29.3)	B (13.8)	C (20.3)	B (16.8)	D (38.9)	B (19.0)
		SB	- (-)		- (-)		- (-)	
		EB	A (9.1)		B (10.7)		C (21.6)	
		WB	B (11.9)		C (22.7)		A (8.8)	
205	15th Street and Bell Street (Unsignalized) | *2040 - Intersection becomes signalized*	NB	- (-)	A (2.9)	- (-)	A (6.4)	D (48.2)	E (70.9)
		SB	- (-)		- (-)		F (101.3)	
		EB	A (0.6)		A (0.7)		A (4.3)	
		WB	A (4.4)		A (8.4)		F (98.6)	
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	NB	- (-)	A (1.0)	- (-)	A (1.2)	- (-)	C (28.9)
		SB	A (1.0)		A (0.6)		- (-)	
		EB	A (1.7)		A (4.1)		A (5.4)	
		WB	A (0.3)		A (0.2)		E (47.6)	
207	15th Street and Crystal Dr (Signalized)	NB	B (13.2)	B (15.3)	A (3.2)	B (10.4)	E (78.3)	E (69.5)
		SB	C (20.9)		B (10.5)		F (101.7)	
		EB	B (15.9)		D (39.3)		C (26.5)	
		WB	- (-)		- (-)		- (-)	

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Approach LOS* and Delay Comparison by Cross Street

PM Peak Hour

**Reported level of service from Vissim is not calculated with passenger car equivalents; thus, the LOS is not representative of HCM LOS.*

Coloring represents estimated Approach level of service (LOS). Green represents LOS A-C, Yellow represents LOS D, Orange represents LOS E, Red represents LOS F.

Approach Delay Reported in seconds per vehicle

#	Approach	Approach	Existing		2025 No Build		2040 No Build	
			Approach	Approach	Approach	Approach	Approach	Approach
208	18th Street and Eads Street (Signalized)	NB	B (16.3)	C (21.7)	C (23.0)	C (27.1)	C (33.9)	C (29.6)
		SB	B (16.4)		B (12.3)		B (16.0)	
		EB	C (32.3)		C (32.9)		D (42.8)	
		WB	C (23.2)		D (37.0)		C (30.5)	
1002	18th Street and Route 1 At-Grade (Signalized)	NB						
		SB						
		EB						
		WB						
209	18th Street and Bell Street (Signalized)	NB	C (25.6)	B (12.9)	D (42.8)	B (19.2)	C (31.6)	B (14.7)
		SB	C (21.8)		C (21.0)		B (19.7)	
		EB	B (10.7)		B (16.1)		B (12.2)	
		WB	A (5.0)		B (11.1)		B (10.8)	
210	18th Street and Crystal Dr (Signalized)	NB	B (16.2)	B (15.2)	A (7.5)	B (17.2)	E (74.2)	D (52.5)
		SB	B (15.3)		A (7.1)		C (24.7)	
		EB	B (12.5)		C (34.8)		D (53.1)	
		WB	B (14.0)		D (41.4)		E (62.8)	

Approach LOS* and Delay Comparison by Cross Street

PM Peak Hour

**Reported level of service from Vissim is not calculated with passenger car equivalents; thus, the LOS is not representative of HCM LOS.*

Coloring represents estimated Approach level of service (LOS). Green represents LOS A-C, Yellow represents LOS D, Orange represents LOS E, Red represents LOS F.

Approach Delay Reported in seconds per vehicle

#	Approach	Approach	Existing		2025 No Build		2040 No Build	
			Approach	Approach	Approach	Approach	Approach	Approach
211	20th Street and Eads Street (Signalized)	NB	C (20.5)	B (17.3)	B (16.0)	B (18.1)	B (18.6)	B (15.4)
		SB	B (16.2)		B (19.2)		B (13.4)	
		EB	B (15.9)		B (17.3)		B (18.2)	
		WB	B (17.1)		B (17.6)		B (17.9)	
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	NB	A (0.3)	C (23.0)	A (0.2)	C (24.9)		
		SB	D (37.3)		D (37.3)			
		EB	- (-)		- (-)			
		WB	D (54.9)		D (47.3)			
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Porition) | *2040 - Clark Street Aligned with Bell Street*	NB	D (41.7)	C (23.6)	D (38.2)	C (20.8)	D (44.7)	D (49.5)
		SB	A (4.1)		A (1.1)		D (50.5)	
		EB	D (37.8)		F (128.6)		D (51.0)	
		WB	- (-)		- (-)		E (59.5)	
103		Total		C (23.3)		C (23.0)		
212	20th Street and Bell Street (Unsignalized) | *2040 - Clark Street Aligned with Bell Street*	NB	B (11.7)	A (8.9)	E (40.3)	C (31.8)	C (22.8)	B (16.8)
		SB	B (12.2)		F (68.7)		C (19.8)	
		EB	A (2.1)		A (4.0)		A (6.1)	
		WB	A (8.4)		C (17.9)		C (19.9)	
213	20th Street and Crystal Dr (Signalized)	NB	B (13.1)	B (16.9)	C (26.9)	C (24.2)	C (28.3)	D (36.5)
		SB	C (23.9)		C (24.2)		E (63.0)	
		EB	B (16.4)		C (24.4)		C (34.4)	
		WB	B (13.1)		B (18.9)		C (21.1)	

Approach LOS* and Delay Comparison by Cross Street

PM Peak Hour

**Reported level of service from Vissim is not calculated with passenger car equivalents; thus, the LOS is not representative of HCM LOS.*

Coloring represents estimated Approach level of service (LOS). Green represents LOS A-C, Yellow represents LOS D, Orange represents LOS E, Red represents LOS F.

Approach Delay Reported in seconds per vehicle

#	Approach	Approach	Existing		2025 No Build		2040 No Build	
			Approach	Approach	Approach	Approach	Approach	Approach
201	12th Street and Eads Street (Signalized)	NB	B (12.0)	B (18.5)	B (16.2)	C (29.4)	C (27.5)	E (67.4)
		SB	B (16.2)		B (16.0)		F (88.8)	
		EB	C (24.5)		E (60.3)		F (103.8)	
		WB	C (23.9)		D (47.9)		E (68.2)	
202	12th Street and Army Navy Dr (Unsignalized) | *2025 - Intersection becomes signalized*	NB	A (7.9)	A (4.0)	E (69.0)	C (26.1)	E (68.7)	E (75.0)
		SB	C (15.5)		E (75.3)		F (679.2)	
		EB	A (0.7)		E (62.4)		C (30.1)	
		WB	A (1.6)		A (7.8)		A (9.7)	
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	C (25.3)	B (18.3)	F (80.4)	D (44.6)	F (92.6)	E (57.3)
		SB	B (13.1)		D (41.6)		E (68.9)	
		EB	B (18.5)		A (7.4)		B (14.6)	
		WB	B (18.3)		D (36.6)		C (31.4)	
214	23rd Street and Eads Street (Signalized)	NB	B (17.5)	B (19.4)	D (37.6)	C (33.4)	B (19.5)	C (30.1)
		SB	C (21.4)		C (25.3)		B (14.7)	
		EB	B (19.5)		E (62.9)		E (69.0)	
		WB	B (17.3)		B (18.9)		B (14.1)	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	- (-)	D (38.2)	- (-)	C (33.2)		
		SB	E (55.0)		E (70.3)			
		EB	A (0.9)		A (0.7)			
		WB	D (53.2)		D (47.5)			
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	E (55.8)	D (51.6)	E (62.3)	D (43.1)	E (62.5)	E (56.7)
		SB	D (52.2)		C (24.0)		D (36.8)	
		EB	D (36.5)		D (43.0)		D (38.7)	
		WB	A (2.8)		A (3.9)		E (58.1)	
104		Total		D (54.7)		D (53.2)		
104A	23rd Street and Clark Street (Signalized) | *2040 - Clark Street Realigned to the East, separated from 104 East/West*	NB					D (42.1)	D (36.2)
		SB					E (77.1)	
		EB					B (19.6)	
		WB					B (17.9)	
215	23rd Street and Crystal Drive (Signalized)	NB	C (34.4)	D (36.1)	F (103.2)	E (63.0)	F (302.9)	F (216.8)
		SB	D (41.3)		B (17.3)		C (25.4)	
		EB	C (30.2)		F (81.5)		F (125.8)	
		WB	C (34.0)		E (58.4)		F (459.5)	

**Results show the average from 10 simulation runs.*

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Intersection Throughput Comparison

PM Peak Hour

** Throughput differences greater than 10% from existing are shown with bold text and color.*

** Green represents an increase greater than 10%. Orange represents a decrease greater than 10%. Red represents no forecasted volume.*

#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
101	15th Street and Route 1 Southbound Ramp (Signalized)	SB	SBL	239	1,089	**176**	**886**	**169**	**973**
			SBR	850		**710**		804	
		EB	EBT	409	493	**494**	**596**	**590**	**814**
			EBR	84		**102**		**224**	
		WB	WBL	36	398	33	**461**	0	**560**
			WBT	362		**428**		**560**	
		Intersection		**1,980**		1,943		**2,347**	
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	NBL	196	264	**171**	**171**	211	**211**
			NBT	0		0		0	
			NBR	68		0		0	
		EB	EBL	345	647	**457**	670	**529**	**761**
			EBT	302		**213**		**232**	
			EBR	0		0		0	
		WB	WBL	0	570	0	594	0	614
			WBT	201		**289**		**345**	
			WBR	369		**305**		**269**	
		Intersection		1,481		1,435		1,586	

Intersection Throughput Comparison

PM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	NB	NBT	1,534	1,615	1,488	1,617		
			NBR-20th St	37		**120**			
			NBR-Clark	44		**9**			
		SB	SBL-20th	52	1,581	**144**	**1,900**		
			SBL-Clark	59		**9**			
			SBT	1,470		**1,747**			
		WB	WBL-Route 1	195	439	**381**	**729**		
			WBL-Clark	42		43			
			WBR-Route 1	202		**305**			
		Intersection		3,635		**4,246**			
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Portion) | *2040 - Clark Street Aligned with Bell Street*	NB	NBL	74	1,618	**26**	1,510	39	1,679
			NBT	1,544		1,484		1,583	
			NBR	0		0		57	
		SB	SBL	0	1,655	0	**2,127**	218	**2,017**
			SBT	1,525		**1,791**		**1,702**	
			SBR	130		**336**		**97**	
		EB	EBL	72	217	**136**	**144**	**89**	**260**
			EBT	0		0		37	
			EBR	145		8		134	
		WB	WBL					221	589
			WBT					106	
			WBR					262	
		Intersection		3,490		3,781		**4,545**	

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Intersection Throughput Comparison

PM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	NBL	0	0	0	0		
			NBR	0		0			
		SB	SBL	10	153	2	74		
			SBT	55		49			
			SBR	88		23			
		EB	EBT	132	332	207	408		
			EBR	200		201			
		WB	WBL	62	654	15	730		
			WBT	592		715			
		Intersection		1,139		1,212			
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	NBL	181	1,608	186	1,609	120	1,708
			NBT	1,332		1,313		1,397	
			NBR	95		110		191	
		SB	SBL	88	1,646	80	1,768	102	2,055
			SBT	1,517		1,688		1,953	
			SBR	41		0		0	
		EB	EBL	83	645	69	708	91	603
			EBT	149		217		207	
			EBR	413		422		305	
		EB	EBL	168	686	170	739	148	721
			EBT	296		428		376	
			EBR	222		141		197	
		Intersection		3,899		4,085		4,366	
104A	23rd Street and Clark Street (Signalized) | *2040 - Clark Street Realigned to the East, separated from 104 East/West*	NB	NBL					44	48
			NBR					4	
		SB	SBL					2	411
			SBT					48	
			SBR					361	
		EB	EBL					38	498
			EBT					256	
			EBR					204	
		WB	WBT					315	479
			WBR					53	
		Intersection						1,436	

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Intersection Throughput Comparison

PM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
201	12th Street and Eads Street (Signalized)	NB	NBL	38	502	**55**	**634**	0	**439**
			NBT	403		**557**		396	
			NBR	61		**22**		**43**	
		SB	SBL	54	306	0	**205**	**62**	**188**
			SBT	219		201		**124**	
			SBR	33		**4**		**2**	
		EB	EBL	108	302	**66**	**112**	**205**	**361**
			EBT	108		**45**		**40**	
			EBR	86		**1**		**116**	
		WB	WBL	86	384	**152**	417	**211**	419
			WBT	212		**154**		**108**	
			WBR	86		**111**		**100**	
		Intersection		1,494		1,368		1,407	
202	12th Street and Army Navy Dr (Unsignalized) | ***2025 - Intersection becomes signalized***	NB	NBL	5	15	**7**	**22**	**21**	**25**
			NBR	10		**15**		**4**	
		SB	SBL	197	235	**155**	**160**	**84**	**84**
			SBR	34		0		0	
		EB	EBL	13	224	0	**75**	0	**155**
			EBT	196		**35**		**116**	
			EBR	15		**40**		**39**	
		WB	WBT	205	811	216	**629**	218	**668**
			WBR	606		**413**		**450**	
		Intersection		1,285		**886**		**932**	

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Intersection Throughput Comparison

PM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	NBL	174	268	161	373	**193**	368
			NBT	62		**51**		**55**	
			NBR	32		**161**		**120**	
		SB	SBL	57	380	**30**	566	**134**	628
			SBT	104		**345**		**289**	
			SBR	219		**191**		205	
		EB	EBL	149	402	**83**	205	**71**	204
			EBT	156		**71**		**123**	
			EBR	97		**51**		**10**	
		WB	WBL	26	542	**54**	511	**4**	442
			WBT	419		**283**		**277**	
			WBR	97		**174**		**161**	
		Intersection		1,592		1,655		1,642	
204	15th Street and Eads Street (Signalized)	NB	NBL	57	395	**80**	312	**192**	425
			NBT	257		232		233	
			NBR	81		**0**		**0**	
		SB	SBL	109	431	**91**	443	**187**	544
			SBT	282		**340**		299	
			SBR	40		**12**		**58**	
		EB	EBL	65	442	**86**	666	**77**	1,035
			EBT	306		**499**		**621**	
			EBR	71		**81**		**337**	
		WB	WBL	326	1,208	**254**	1,129	**220**	1,350
			WBT	627		**451**		**899**	
			WBR	255		**424**		231	
		Intersection		2,476		2,550		**3,354**	
205	15th Street and Bell Street (Unsignalized) | *2040 - Intersection becomes signalized*	NB	NBT	0	0	**0**	0	103	227
		SB	SBT	0	0	**0**	0	92	249
		EB	EBT	344	356	**172**	207	**229**	229
			EBR	12		**35**		**0**	
		WB	WBL	0	570	**0**	595	5	463
			WBT	570		595		**458**	
			WBR	0		**0**		**0**	
		Intersection		926		**802**		**1,168**	

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Intersection Throughput Comparison

PM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	SB	SBR	205	205	**234**	**234**	0	0
		EB	EBT	342	342	**169**	**169**	355	355
		WB	WBT	375	375	370	370	**448**	**448**
		Intersection		922		**773**		**803**	
207	15th Street and Crystal Dr (Signalized)	NB	NBL	316	693	308	680	347	**590**
			NBT	377		372		**243**	
		SB	SBT	157	217	**126**	**187**	**212**	**315**
			SBR	60		61		**103**	
		EB	EBL	110	343	**60**	**169**	117	356
			EBR	233		**109**		239	
		Intersection		1,253		**1,036**		1,261	
208	18th Street and Eads Street (Signalized)	NB	NBL	78	374	**94**	**443**	**111**	347
			NBT	268		242		**223**	
			NBR	28		**107**		**13**	
		SB	SBL	35	613	0	**479**	**39**	**690**
			SBT	547		**479**		**621**	
			SBR	31		0		30	
		EB	EBL	51	454	**13**	**692**	**76**	**568**
			EBT	170		**435**		158	
			EBR	233		244		**334**	
		WB	WBL	62	344	**210**	**506**	**24**	332
			WBT	208		**241**		188	
			WBR	74		**55**		**120**	
		Intersection		1,785		**2,120**		1,937	

Intersection Throughput Comparison

PM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
209	18th Street and Bell Street (Signalized)	NB	NBL	53	67	**145**	**164**	**32**	**93**
			NBT	9		**0**		**51**	
			NBR	5		**19**		**10**	
		SB	SBL	25	210	**12**	**239**	**13**	**93**
			SBT	129		122		**80**	
			SBR	56		**105**		**0**	
		EB	EBL	14	234	**0**	**534**	**2**	**206**
			EBT	168		**297**		**103**	
			EBR	52		**237**		**101**	
		WB	WBL	23	280	**32**	**328**	**41**	**390**
			WBT	238		260		**299**	
			WBR	19		**36**		**50**	
		Intersection		791		**1,265**		782	
210	18th Street and Crystal Dr (Signalized)	NB	NBL	113	615	**44**	**500**	**87**	586
			NBT	494		**374**		**394**	
			NBR	8		**82**		**105**	
		SB	SBL	10	401	**65**	**356**	**68**	**505**
			SBT	318		**210**		**390**	
			SBR	73		**81**		**47**	
		EB	EBL	67	214	**88**	**369**	**23**	**185**
			EBT	5		**79**		**104**	
			EBR	142		**202**		**58**	
		WB	WBL	5	25	**13**	**79**	**39**	**110**
			WBT	10		**34**		**14**	
			WBR	10		**32**		**57**	
		Intersection		1,255		1,304		**1,386**	

Intersection Throughput Comparison

PM Peak Hour

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#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
211	20th Street and Eads Street (Signalized)	NB	NBL	11	303	**5**	278	**24**	**259**
			NBT	226		224		**164**	
			NBR	66		**49**		71	
		SB	SBL	119	788	**82**	768	**183**	831
			SBT	651		608		597	
			SBR	18		**78**		**51**	
		EB	EBL	5	55	**36**	**82**	**45**	**78**
			EBT	34		**12**		**8**	
			EBR	16		**34**		**25**	
		WB	WBL	90	205	**185**	**363**	**109**	**246**
			WBT	44		**99**		**93**	
			WBR	71		**79**		**44**	
		Intersection		1,351		**1,491**		1,414	
212	20th Street and Bell Street (Unsignalized) | *2040 - Clark Street Aligned with Bell Street*	NB	NBL	9	30	**47**	**61**	**36**	**61**
			NBT	9		**0**		**12**	
			NBR	12		**14**		13	
		SB	SBL	51	211	**70**	**393**	**69**	230
			SBT	4		**0**		**8**	
			SBR	156		**323**		153	
		EB	EBL	28	89	**8**	**264**	**22**	**312**
			EBT	57		**182**		**272**	
			EBR	4		**74**		**18**	
		WB	WBL	6	338	**26**	**553**	**271**	**742**
			WBT	302		**372**		**413**	
			WBR	30		**155**		**58**	
		Intersection		668		**1,271**		**1,345**	

Intersection Throughput Comparison

PM Peak Hour

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** Green represents an increase greater than 10%. Orange represents a decrease greater than 10%. Red represents no forecasted volume.*

#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
213	20th Street and Crystal Dr (Signalized)	NB	NBL	107	552	**244**	**659**	100	573
			NBT	436		415		462	
			NBR	9		**0**		**11**	
		SB	SBL	22	464	**28**	426	**9**	490
			SBT	369		**318**		**260**	
			SBR	73		80		**221**	
		EB	EBL	39	112	**31**	**203**	**21**	**257**
			EBT	6		**29**		**44**	
			EBR	67		**143**		**192**	
		WB	WBT	105	276	**120**	**353**	**262**	**499**
			WBR	155		**63**		**121**	
		Intersection		1,404		**1,641**		**1,819**	
214	23rd Street and Eads Street (Signalized)	NB	NBL	26	333	**53**	**544**	**69**	**380**
			NBT	187		**289**		**221**	
			NBR	120		**202**		**90**	
		SB	SBL	224	805	**144**	843	**186**	742
			SBT	525		**601**		**462**	
			SBR	56		**98**		**94**	
		EB	EBL	21	413	**3**	**457**	**11**	**606**
			EBT	304		**350**		328	
			EBR	88		**104**		**267**	
		WB	WBL	87	520	**169**	**612**	**112**	501
			WBT	331		**371**		334	
			WBR	102		**72**		**55**	
		Intersection		2,071		**2,456**		2,229	

Intersection Throughput Comparison

PM Peak Hour

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** Green represents an increase greater than 10%. Orange represents a decrease greater than 10%. Red represents no forecasted volume.*

#	Intersection	Approach	Movement	Existing		2025 No Build		2040 No Build	
215	23rd Street and Crystal Drive (Signalized)	NB	NBL	266	619	**225**	643	**106**	**365**
			NBT	341		**417**		**252**	
			NBR	12		**1**		**7**	
		SB	SBL	20	445	**90**	**583**	**48**	**508**
			SBT	263		**469**		**329**	
			SBR	162		**24**		**131**	
		EB	EBL	62	119	56	**148**	**85**	**259**
			EBT	14		**50**		**153**	
			EBR	43		42		**21**	
		WB	WBL	26	240	**23**	**402**	**57**	**368**
			WBT	150		**295**		**241**	
			WBR	64		**84**		70	
		Intersection		1,423		**1,776**		1,500	

**Results show the average from 10 simulation runs.*

Intersection Queue Comparison

PM Peak Hour

** **Red** represents a queue increase greater than 20% over existing. **Green** represents a queue decrease greater than 20% over existing.*

Intersection		Approach	Existing		2025 No Build		2040 No Build	
			Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)
101	15th Street and Route 1 Southbound Ramp (Signalized)	NB	0	0	0	0	0	0
		SB	222	789	79	305	109	424
		EB	26	179	58	390	109	402
		WB	4	50	7	57	33	249
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	50	262	18	175	45	293
		SB	0	0	0	0	0	0
		EB	76	296	46	322	73	321
		WB	28	131	46	130	75	152
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	NB	32	259	51	326		
		SB	165	573	220	608		
		EB	0	0	0	0		
		WB	78	248	126	259		
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Porition) | *2040 - Clark Street Aligned with Bell Street*	NB	244	872	224	787	351	904
		SB	18	166	5	179	735	1321
		EB	40	194	58	206	46	193
		WB	0	0	0	0	116	298
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	0	0	0	0		
		SB	40	160	25	183		
		EB	1	143	1	114		
		WB	106	345	124	465		
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	NB	133	429	280	664	315	1075
		SB	337	826	124	632	284	915
		EB	80	272	122	286	71	264
		EB	4	114	5	110	162	399
		WB	0	0	0	0	0	0
104A	23rd Street and Clark Street (Signalized) | *2040 - Clark Street Realigned to the East, separated from 104 East/West*	NB					5	92
		SB					280	547
		EB					45	297
		WB					23	257
201	12th Street and Eads Street (Signalized)	NB	32	346	79	374	90	379
		SB	26	218	19	192	106	386
		EB	33	236	33	164	239	324
		WB	47	264	140	466	229	482

Kimley»Horn

Intersection Queue Comparison

PM Peak Hour

** **Red** represents a queue increase greater than 20% over existing. **Green** represents a queue decrease greater than 20% over existing.*

Intersection		Approach	Existing		2025 No Build		2040 No Build	
			Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)
202	12th Street and Army Navy Dr (Unsignalized) | *2025 - Intersection becomes signalized*	NB	1	57	8	110	8	114
		SB	9	139	55	205	1055	1084
		EB	1	75	22	122	23	166
		WB	2	217	28	233	38	252
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	29	194	160	438	193	447
		SB	13	148	127	652	485	739
		EB	27	201	6	56	13	93
		WB	66	289	136	307	93	290
204	15th Street and Eads Street (Signalized)	NB	40	330	89	453	211	545
		SB	38	280	203	452	319	465
		EB	21	176	48	372	115	509
		WB	64	298	51	302	138	388
205	15th Street and Bell Street (Unsignalized) | *2040 - Intersection becomes signalized*	NB	0	0	0	0	66	187
		SB	0	0	0	0	169	462
		EB	0	76	0	93	4	111
		WB	2	81	2	89	314	388
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	NB	0	0	0	0	0	0
		SB	0	29	0	0	0	0
		EB	0	12	0	10	1	46
		WB	0	0	0	0	161	247
207	15th Street and Crystal Dr (Signalized)	NB	32	207	6	93	210	377
		SB	25	238	8	194	403	1135
		EB	23	152	32	160	42	182
		WB	0	0	0	0	0	0
208	18th Street and Eads Street (Signalized)	NB	28	224	50	277	60	266
		SB	64	367	35	342	74	372
		EB	54	275	58	326	96	426
		WB	26	135	65	287	36	198

Kimley»Horn

Intersection Queue Comparison

PM Peak Hour

** **Red** represents a queue increase greater than 20% over existing. **Green** represents a queue decrease greater than 20% over existing.*

Intersection		Approach	Existing		2025 No Build		2040 No Build	
			Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)	Vissim Average Queue (ft)	Vissim Max Queue (ft)
209	18th Street and Bell Street (Signalized)	NB	6	85	32	191	14	152
		SB	22	170	22	173	9	104
		EB	8	159	37	313	6	187
		WB	6	84	14	116	16	139
210	18th Street and Crystal Dr (Signalized)	NB	43	439	16	300	286	559
		SB	41	196	10	149	110	265
		EB	11	139	68	259	56	232
		WB	1	37	15	123	32	199
211	20th Street and Eads Street (Signalized)	NB	37	281	26	245	25	219
		SB	67	375	71	365	41	342
		EB	4	70	6	85	7	89
		WB	16	138	30	173	16	195
212	20th Street and Bell Street (Unsignalized) | *2040 - Clark Street Aligned with Bell Street*	NB	1	54	11	108	4	80
		SB	20	175	148	511	20	145
		EB	0	62	2	103	9	132
		WB	10	207	40	303	68	296
213	20th Street and Crystal Dr (Signalized)	NB	32	189	110	218	118	213
		SB	73	398	62	449	304	555
		EB	4	86	19	165	54	227
		WB	15	136	25	172	39	220
214	23rd Street and Eads Street (Signalized)	NB	21	223	106	302	25	265
		SB	67	356	96	352	36	298
		EB	39	311	249	780	834	998
		WB	44	311	108	293	26	202
215	23rd Street and Crystal Drive (Signalized)	NB	80	396	708	1069	1170	1427
		SB	151	324	44	298	66	313
		EB	16	143	42	179	108	314
		WB	32	160	87	292	1167	1236

**Results show the average from 10 simulation runs.*

Kimley»Horn

Intersection Pedestrian Throughput

PM Peak Hour

Intersection		Crosswalk Location	Approach	Existing		2025 No Build		2040 No Build	
				Approach	Crosswalk	Approach	Crosswalk	Approach	Crosswalk
101	15th Street and Route 1 Southbound Ramp (Signalized)	North Leg	EB	26	52	82	163	151	303
			WB	26		81		152	
		South Leg	EB	23	46	78	156	141	282
			WB	23		78		141	
		West Leg	NB	0	0	0	0	0	0
			SB	0		0		0	
102	15th Street and Route 1 Northbound Ramp (Signalized)	North Leg	EB	28	56	85	170	152	304
			WB	28		85		152	
		South Leg	EB	41	82	77	154	140	280
			WB	41		77		140	
		East Leg	NB	21	42	28	55	44	87
			SB	21		27		43	
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	North Leg	EB	11	22	15	30		
			WB	11		15			
		East Leg	NB	61	122	81	162		
			SB	61		81			
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Porition) | *2040 - Clark Street Aligned with Bell Street*	South Leg	EB	10	20	14	28	0	0
			WB	10		14		0	
		West Leg	NB	61	122	82	163	125	250
			SB	61		81		125	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	North Leg	EB	48	96	63	126		
			WB	48		63			
		South Leg	EB	77	155	102	204		
			WB	78		102			
		East Leg	NB	62	125	80	161		
			SB	63		81			
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	North Leg	EB	48	96	63	126	98	195
			WB	48		63		97	
		South Leg	EB	77	154	103	205	157	315
			WB	77		102		158	
		East Leg	NB	0	6	8	16	12	24
			SB	6		8		12	
		West Leg	NB	10	20	13	25	20	40
			SB	10		12		20	

**Results show the average from 10 simulation runs.*

Kimley»Horn

Intersection Pedestrian Delay

PM Peak Hour

Delay Reported in seconds per pedestrian

Intersection		Crosswalk Location	Approach	Existing		2025 No Build		2040 No Build	
				Approach	Crosswalk	Approach	Crosswalk	Approach	Crosswalk
101	15th Street and Route 1 Southbound Ramp (Signalized)	North Leg	EB	42.9	43.5	57.1	57.2	56.7	55.4
			WB	44.1		57.3		54.1	
		South Leg	EB	31.3	30.1	31.0	30.9	25.6	26.1
			WB	28.9		30.9		26.6	
		West Leg	NB	-	-	-	-	-	-
			SB	-		-		-	
102	15th Street and Route 1 Northbound Ramp (Signalized)	North Leg	EB	31.5	30.8	48.2	47.3	47.9	47.6
			WB	30.0		46.5		47.3	
		South Leg	EB	4.2	4.5	4.8	5.1	6.3	6.1
			WB	4.8		5.4		5.9	
		East Leg	NB	119.2	115.6	175.4	169.7	168.2	167.4
			SB	112.0		163.9		166.5	
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion) | *2040 - Clark Street Aligned with Bell Street*	North Leg	EB	185.7	186.0	192.0	193.0		
			WB	186.2		193.9			
		East Leg	NB	37.1	35.5	39.6	39.6		
			SB	33.9		39.5			
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Porition) | *2040 - Clark Street Aligned with Bell Street*	South Leg	EB	59.9	53.2	51.2	59.5	-	-
			WB	46.6		67.8		-	
		West Leg	NB	35.5	34.6	38.8	38.8	39.4	42.6
			SB	33.6		38.8		45.9	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion) | *2040 - Clark Street Realigned to the East (104A)*	North Leg	EB	100.8	80.8	100.4	78.3		
			WB	60.8		56.2			
		South Leg	EB	115.4	86.2	115.0	85.3		
			WB	57.4		55.5			
		East Leg	NB	180.9	179.2	50.9	53.1		
			SB	177.4		55.3			
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion) | *2040 - Clark Street Realigned to the East (104A)*	North Leg	EB	58.7	89.5	56.8	84.6	64.2	63.6
			WB	120.3		112.4		63.0	
		South Leg	EB	184.3	213.0	172.3	201.8	188.3	183.9
			WB	241.7		231.6		179.4	
		East Leg	NB	-	254.2	63.3	92.2	289.4	170.2
			SB	254.2		121.0		51.1	
		West Leg	NB	47.7	47.9	41.0	43.5	35.9	35.7
			SB	48.0		46.2		35.5	

**Results show the average from 10 simulation runs.*

Kimley»Horn

Appendix D
AM Individual Vissim Intersection Results

Intersection Performance

AM Peak Hour | Existing AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
101	15th Street and Route 1 Southbound Ramp (Signalized)	SB	SBL	360	720	363	719	D (46.2)	C (33.1)	67	67	302	302
			SBR	360		356		B (19.7)		67		302	
		EB	EBT	925	1,050	911	1,028	C (31.8)	C (30.2)	88	88	419	419
			EBR	125		117		B (17.2)		83		419	
		WB	WBL	35	185	32	167	D (47.8)	A (9.4)	8	8	79	79
			WBT	150		135		A (0.3)		8		79	
		Intersection		1,955		1,914		C (29.4)					
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	NBL	85	145	68	121	D (40.7)	C (27.7)	12	12	125	125
			NBR	60		53		B (11.0)		12		125	
		EB	EBL	655	1,285	636	1,277	C (21.2)	B (12.3)	126	126	278	278
			EBT	630		641		A (3.4)		126		278	
		WB	WBT	100	350	99	338	C (21.0)	B (11.8)	17	18	146	149
			WBR	250		239		A (8.0)		18		149	
		Intersection		1,780		1,736		B (13.3)					
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion)	NB	NBT	2,290	2,375	2,118	2,190	A (3.3)	A (3.3)	34	34	216	216
			NBR-20th St	57		48		A (6.0)		34		216	
			NBR-Clark	28		24		A (6.6)		34		216	
		SB	SBL-20th	133	1,745	133	1,648	E (74.1)	D (38.0)	169	169	547	547
			SBL-Clark	67		65		E (76.9)		169		547	
			SBT	1,545		1,450		C (33.0)		169		547	
		WB	WBL-Route 1	95	250	31	179	D (50.5)	D (51.9)	44	44	244	244
			WBL-Clark	20		20		D (44.7)		44		244	
			WBR-Route 1	135		128		D (53.4)		44		244	
		Intersection		4,370		4,017		B (19.7)					
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Portion)	NB	NBL	30	2,235	27	2,063	D (50.7)	B (16.8)	89	89	769	769
			NBT	2,205		2,036		B (16.3)		89		769	
		SB	SBT	1,520	1,640	1,483	1,603	A (1.3)	A (1.2)	3	3	160	160
			SBR	120		120		A (0.0)		1		149	
		EB	EBL	170	245	157	226	F (98.5)	E (71.1)	76	79	260	265
			EBR	75		69		A (8.7)		79		265	
		Intersection		4,120		3,892		B (13.5)					
103	Combined Intersection							B (16.7)					

Intersection Performance

AM Peak Hour | Existing AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion)	SB	SBL	10	115	8	112	F (105.2)	F (130.4)	79	79	212	212
			SBT	25		28		F (122.2)		79		212	
			SBR	80		76		F (136.0)		79		212	
		EB	EBT	460	930	437	890	A (0.4)	A (0.3)	0	1	34	128
			EBR	470		453		A (0.2)		1		128	
		WB	WBL	35	295	33	286	D (50.1)	D (52.5)	60	60	284	284
			WBT	260		78		D (47.8)		60		284	
			WBR	0		175		D (55.0)		60		284	
		Intersection		1,340		1,288		C (23.2)					
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion)	NB	NBL	70	2,085	50	1,754	F (230.9)	F (216.1)	26	1,232	131	1,675
			NBT	1,865		1,583		F (213.3)		1,232		1,675	
			NBR	150		121		F (247.3)		1,232		1,675	
		SB	SBL	520	1,595	517	1,553	C (33.8)	B (19.6)	73	84	401	452
			SBT	1,025		990		B (12.6)		73		401	
			SBR	50		46		B (11.1)		84		452	
		EB	EBL	195	635	185	602	E (58.2)	D (41.5)	134	134	274	275
			EBT	260		241		D (50.9)		134		274	
			EBR	180		176		B (11.0)		132		275	
		WB	WBL	60	340	55	329	B (10.4)	A (2.8)	3	3	111	115
			WBT	105		99		A (0.4)		3		111	
			WBR	175		175		A (1.9)		3		115	
		Intersection		4,315		3,909		F (111.4)					
104	Combined Intersection							F (140.1)					
201	12th Street and Eads Street (Signalized)	NB	NBL	35	440	33	433	B (14.1)	B (14.3)	20	22	232	235
			NBT	185		187		B (10.9)		20		232	
			NBR	220		213		B (17.4)		22		235	
		SB	SBL	285	580	282	580	C (20.9)	C (20.2)	69	69	494	494
			SBT	260		260		B (19.7)		69		494	
			SBR	35		38		B (17.8)		69		493	
		EB	EBL	85	405	82	405	D (44.3)	D (41.8)	94	97	486	490
			EBT	290		285		D (41.6)		94		486	
			EBR	30		38		D (37.9)		97		490	
		WB	WBL	60	195	59	192	E (57.0)	D (36.0)	27	35	164	176
			WBT	75		73		C (30.8)		27		164	
			WBR	60		60		C (21.8)		35		176	
		Intersection		1,620		1,610		C (25.9)					

Intersection Performance

AM Peak Hour | Existing AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
202	12th Street and Army Navy Dr (Unsignalized)	NB	NBT	5	15	6	15	C (17.5)	C (19.8)	1	1	51	53
			NBR	10		9		C (21.3)		1		53	
		SB	SBL	305	350	266	310	F (233.2)	F (201.5)	437	437	853	853
			SBR	45		44		A (9.7)		433		849	
		EB	EBL	5	795	4	789	A (2.5)	A (2.9)	14	14	284	284
			EBT	780		776		A (2.9)		8		203	
			EBR	10		9		A (3.5)		13		281	
		WB	WBT	100	290	100	284	A (0.6)	A (1.0)	0	0	75	87
			WBR	190		184		A (1.2)		0		87	
		Intersection		1,450		1,398		D (46.7)					
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	NBL	35	65	36	66	C (29.1)	C (24.0)	4	4	72	72
			NBT	20		20		C (22.8)		2		62	
			NBR	10		10		A (8.6)		3		63	
		SB	SBL	45	275	47	274	C (26.9)	B (17.2)	21	21	157	157
			SBT	130		124		C (23.0)		21		157	
			SBR	100		103		A (5.9)		2		68	
		EB	EBL	420	1,095	402	1,047	B (18.5)	B (11.6)	52	52	271	271
			EBT	275		261		A (9.4)		52		271	
			EBR	400		384		A (5.8)		51		271	
		WB	WBL	35	355	37	343	B (14.8)	B (15.9)	2	30	58	256
			WBT	155		146		B (15.2)		27		253	
			WBR	165		160		B (16.7)		30		256	
		Intersection		1,790		1,730		B (13.8)					
204	15th Street and Eads Street (Signalized)	NB	NBL	35	540	40	519	C (23.6)	B (12.6)	24	24	271	271
			NBT	250		239		B (17.7)		24		271	
			NBR	255		240		A (5.7)		3		113	
		SB	SBL	170	395	173	401	C (29.0)	C (21.8)	30	30	193	197
			SBT	215		214		B (16.8)		30		193	
			SBR	10		14		B (10.2)		30		197	
		EB	EBL	60	735	66	733	C (23.3)	C (23.9)	7	66	185	402
			EBT	625		616		C (25.4)		66		402	
			EBR	50		51		A (7.6)		41		368	
		WB	WBL	85	510	79	489	C (28.5)	B (15.8)	21	22	150	163
			WBT	290		280		B (14.8)		21		150	
			WBR	135		130		B (10.2)		22		163	
		Intersection		2,180		2,142		B (18.9)					

Intersection Performance

AM Peak Hour | Existing AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
205	15th Street and Bell Street (Unsignalized)	EB	EBT	535	690	525	681	A (1.0)	A (1.1)	1	1	178	178
			EBR	155		156		A (1.3)		1		129	
		WB	WBT	350	350	341	341	A (3.4)	A (3.4)	0	0	50	50
		Intersection		1,040		1,022		A (1.8)					
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	SB	SBR	25	25	24	24	A (1.0)	A (1.0)	0	0	11	11
		EB	EBT	535	535	525	525	A (6.6)	A (6.6)	0	0	51	51
		WB	WBT	325	325	319	319	A (0.3)	A (0.3)	0	0	135	135
		Intersection		885		868		A (4.1)					
207	15th Street and Crystal Dr (Signalized)	NB	NBL	270	635	269	635	A (9.6)	A (9.0)	17	17	205	205
			NBT	365		366		A (8.5)		17		205	
		SB	SBT	120	175	120	171	B (16.0)	B (14.8)	10	10	147	151
			SBR	55		51		B (12.1)		8		151	
		EB	EBL	240	535	232	525	C (23.0)	B (16.1)	44	46	201	204
			EBR	295		293		B (10.7)		46		204	
		Intersection		1,345		1,331		B (12.5)					
208	18th Street and Eads Street (Signalized)	NB	NBL	35	450	33	421	B (17.1)	B (16.3)	33	33	279	279
			NBT	335		314		B (15.9)		33		279	
			NBR	80		74		B (17.8)		14		252	
		SB	SBL	75	270	75	262	C (23.5)	B (15.5)	15	16	173	178
			SBT	170		163		B (13.1)		15		173	
			SBR	25		24		A (7.2)		16		178	
		EB	EBL	145	915	145	896	C (26.2)	C (21.3)	45	45	269	269
			EBT	615		602		B (19.6)		45		269	
			EBR	155		149		C (23.3)		17		206	
		WB	WBL	40	195	40	192	C (32.7)	C (23.4)	13	13	107	107
			WBT	95		96		B (18.8)		13		107	
			WBR	60		56		C (24.4)		13		107	
		Intersection		1,830		1,771		B (19.5)					

Intersection Performance

AM Peak Hour | Existing AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
209	18th Street and Bell Street (Signalized)	NB	NBL	30	65	35	68	C (32.5)	C (23.9)	8	8	113	114
			NBT	5		5		B (19.5)		8		113	
			NBR	30		28		B (13.9)		6		114	
		SB	SBL	50	155	57	163	C (29.7)	B (20.0)	15	15	133	135
			SBT	70		72		B (16.7)		15		133	
			SBR	35		34		B (10.7)		12		135	
		EB	EBL	50	770	51	758	B (18.0)	B (15.0)	40	40	323	325
			EBT	540		532		B (14.3)		40		323	
			EBR	180		175		B (16.4)		39		325	
		WB	WBL	25	170	26	165	C (21.8)	B (12.4)	6	6	91	97
			WBT	130		124		B (10.8)		6		91	
			WBR	15		15		A (9.2)		6		97	
		Intersection		1,160		1,154		B (15.9)					
210	18th Street and Crystal Dr (Signalized)	NB	NBL	125	600	122	591	B (18.1)	B (13.2)	9	31	102	263
			NBT	465		460		B (12.1)		29		259	
			NBR	10		9		A (4.0)		31		263	
		SB	SBL	10	345	9	343	B (19.7)	B (10.9)	0	20	24	151
			SBT	255		254		B (11.4)		18		146	
			SBR	80		80		A (8.2)		20		151	
		EB	EBL	115	400	111	400	B (16.5)	B (10.9)	16	18	154	156
			EBT	35		36		B (12.9)		16		154	
			EBR	250		253		A (8.1)		18		156	
		WB	WBT	15	30	15	30	B (19.7)	B (14.5)	1	1	40	43
			WBR	15		15		A (9.2)		1		43	
		Intersection		1,375		1,364		B (12.0)					
211	20th Street and Eads Street (Signalized)	NB	NBL	5	490	7	457	A (8.0)	A (7.5)	12	12	302	302
			NBT	370		341		A (6.2)		12		302	
			NBR	115		109		B (11.9)		12		302	
		SB	SBL	100	295	94	285	C (31.2)	B (18.6)	24	25	208	220
			SBT	190		186		B (12.6)		24		208	
			SBR	5		5		A (5.9)		25		220	
		EB	EBL	5	40	5	40	B (18.0)	C (23.5)	4	4	63	63
			EBT	30		30		C (26.1)		4		63	
			EBR	5		5		B (13.8)		3		61	
		WB	WBL	65	150	62	147	C (20.3)	B (13.1)	7	9	86	89
			WBT	10		10		C (23.9)		7		86	
			WBR	75		75		A (5.7)		9		89	
		Intersection		975		929		B (12.5)					

Intersection Performance

AM Peak Hour | Existing AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
212	20th Street and Bell Street (Unsignalized)	NB	NBL	5	15	4	15	B (11.3)	A (9.7)	1	1	81	82
			NBT	5		5		B (12.2)		1		82	
			NBR	5		6		A (6.6)		1		81	
		SB	SBL	125	275	123	277	B (12.0)	B (10.4)	18	23	124	142
			SBT	10		11		B (10.6)		23		142	
			SBR	140		143		A (9.0)		0		53	
		EB	EBL	45	190	41	181	A (1.7)	A (3.1)	2	2	166	166
			EBT	140		136		A (3.6)		2		162	
			EBR	5		4		A (4.7)		2		162	
		WB	WBL	10	130	9	138	A (2.1)	A (3.4)	0	1	76	107
			WBT	105		106		A (3.4)		1		107	
			WBR	15		23		A (4.2)		1		87	
		Intersection		610		611		A (6.7)					
213	20th Street and Crystal Dr (Signalized)	NB	NBL	125	715	123	712	B (18.6)	B (10.5)	11	40	175	194
			NBT	555		557		A (9.0)		37		185	
			NBR	35		32		A (5.6)		40		194	
		SB	SBL	120	505	113	503	D (38.7)	B (19.7)	21	27	195	305
			SBT	320		318		B (14.2)		27		302	
			SBR	65		72		B (13.8)		27		305	
		EB	EBL	35	185	32	181	C (21.4)	B (16.3)	3	12	57	142
			EBT	60		58		B (19.0)		10		138	
			EBR	90		91		B (12.7)		12		142	
		WB	WBT	5	15	5	15	B (19.3)	B (11.5)	0	1	32	35
			WBR	10		10		A (7.6)		1		35	
		Intersection		1,420		1,411		B (14.5)					

Intersection Performance

AM Peak Hour | Existing AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
214	23rd Street and Eads Street (Signalized)	NB	NBL	35	675	33	626	D (44.6)	E (66.1)	233	233	496	496
			NBT	415		384		E (56.7)		233		496	
			NBR	225		209		F (86.8)		233		496	
		SB	SBL	75	275	76	267	E (71.0)	D (37.2)	36	36	250	250
			SBT	185		175		C (25.3)		36		250	
			SBR	15		16		A (6.8)		0		50	
		EB	EBL	20	380	19	351	F (124.3)	F (165.4)	395	395	951	951
			EBT	335		307		F (168.6)		395		951	
			EBR	25		25		F (157.4)		394		951	
		WB	WBL	45	225	40	203	C (32.9)	B (13.4)	9	9	89	97
			WBT	125		116		B (11.1)		9		89	
			WBR	55		47		A (2.6)		6		97	
		Intersection		1,555		1,447		E (77.5)					
215	23rd Street and Crystal Drive (Signalized)	NB	NBL	125	725	120	707	C (23.9)	D (37.3)	144	151	489	499
			NBT	450		449		D (49.0)		144		489	
			NBR	150		138		B (11.1)		151		499	
		SB	SBL	55	375	53	369	C (22.6)	C (26.1)	55	55	303	307
			SBT	220		215		C (28.5)		55		303	
			SBR	100		101		C (22.8)		55		307	
		EB	EBL	70	360	70	351	D (44.1)	C (27.5)	37	40	235	242
			EBT	110		107		D (44.2)		37		235	
			EBR	180		174		B (10.5)		40		242	
		WB	WBL	5	20	6	21	D (36.5)	C (24.6)	2	2	33	33
			WBT	5		5		D (38.9)		2		33	
			WBR	10		10		B (10.3)		0		33	
		Intersection		1,480		1,448		C (31.9)					

Intersection Performance

AM Peak Hour | 2025 No-Build AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
101	15th Street and Route 1 Southbound Ramp (Signalized)	SB	SBL	389	839	397	837	C (34.0)	C (26.4)	56	56	232	232
			SBR	450		440		B (19.6)		56		232	
		EB	EBT	1,109	1,211	1,060	1,156	C (23.7)	C (23.0)	83	83	399	399
			EBR	102		96		B (14.8)		79		399	
		WB	WBL	21	144	21	158	C (33.2)	A (4.8)	3	3	55	55
			WBT	123		137		A (0.4)		3		55	
		Intersection		2,194		2,151		C (23.0)					
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	NBL	66	66	61	61	C (29.9)	C (29.9)	8	8	102	102
		EB	EBL	755	1,498	706	1,456	A (4.1)	A (3.8)	27	27	258	258
			EBT	743		750		A (3.5)		27		258	
		WB	WBT	78	428	97	451	B (19.3)	B (16.2)	52	55	180	183
			WBR	350		354		B (15.4)		55		183	
		Intersection		1,992		1,968		A (7.4)					
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion)	NB	NBT	2,218	2,314	2,318	2,403	A (2.3)	A (2.4)	27	27	197	197
			NBR-20th St	96		85		A (6.0)		27		197	
		SB	SBL-20th	127	1,700	122	1,420	E (66.7)	C (23.2)	94	94	341	341
			SBT	1,573		1,298		B (19.1)		94		341	
		WB	WBL-Route 1	104	252	72	219	E (66.4)	E (72.4)	58	58	246	246
			WBL-Clark	45		52		E (65.0)		58		246	
			WBR-Route 1	103		95		F (81.0)		58		246	
		Intersection		4,266		4,042		B (13.5)					
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Portion)	NB	NBT	2,145	2,145	2,260	2,260	A (6.0)	A (6.0)	20	20	147	147
		SB	SBT	1,434	1,677	1,370	1,598	A (1.2)	A (1.1)	3	3	172	179
			SBR	243		228		A (0.2)		3		179	
		EB	EBL	170	170	146	146	F (87.4)	F (87.4)	56	56	253	253
		Intersection		3,992		4,004		A (7.0)					
103	Combined Intersection							B (10.3)					

Intersection Performance

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**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion)	SB	SBL	2	44	2	55	F (81.5)	F (141.8)	50	50	191	191
			SBT	42		49		F (145.1)		50		191	
			SBR	0		4		F (130.7)		50		191	
		EB	EBT	557	965	523	911	A (0.3)	A (0.3)	0	1	35	110
			EBR	408		388		A (0.3)		1		110	
		WB	WBT	402	402	326	389	E (59.0)	E (57.3)	74	74	254	254
			WBR	0		63		D (48.4)		74		254	
		Intersection		1,411		1,355		C (22.4)					
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion)	NB	NBL	60	1,978	56	2,123	F (106.8)	E (72.3)	25	414	129	1,062
			NBT	1,815		1,962		E (70.7)		414		1,062	
			NBR	103		105		F (84.2)		414		1,062	
		SB	SBL	559	1,434	537	1,370	D (46.2)	C (22.9)	77	77	323	323
			SBT	875		833		A (7.9)		77		323	
		EB	EBL	268	676	230	586	E (75.9)	D (50.4)	185	185	283	284
			EBT	303		268		D (42.8)		185		283	
			EBR	105		88		A (7.5)		182		284	
		WB	WBL	177	401	171	394	B (13.9)	A (6.3)	10	10	108	108
			WBT	161		160		A (0.5)		10		108	
			WBR	63		63		A (0.6)		1		77	
		Intersection		4,088		4,079		D (53.2)					
104	Combined Intersection							E (58.8)					
201	12th Street and Eads Street (Signalized)	NB	NBL	36	369	34	362	C (20.3)	B (12.3)	16	16	205	209
			NBT	215		211		B (12.9)		16		205	
			NBR	118		117		A (8.9)		16		209	
		SB	SBL	232	653	222	647	C (29.6)	C (27.5)	117	120	653	658
			SBT	241		247		C (27.8)		117		653	
			SBR	180		178		C (24.4)		120		658	
		EB	EBL	87	382	84	375	F (95.7)	E (74.5)	157	161	547	552
			EBT	250		248		E (69.4)		157		547	
			EBR	45		43		E (62.7)		161		552	
		WB	WBL	56	161	52	151	E (60.7)	D (49.7)	32	46	149	169
			WBT	85		81		D (47.1)		32		149	
			WBR	20		18		C (29.5)		46		169	
		Intersection		1,565		1,535		D (37.6)					

Intersection Performance

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ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
202	12th Street and Army Navy Dr (Signalized)	NB	NBL	1	22	1	21	D (48.8)	E (64.8)	7	7	65	65
			NBR	21		20		E (65.6)		7		65	
		SB	SBL	419	419	351	351	F (285.0)	F (285.0)	499	499	1,008	1,008
		EB	EBT	583	600	586	601	C (24.3)	C (24.3)	60	60	254	254
			EBR	17		15		C (25.8)		60		254	
		WB	WBT	82	262	71	224	A (6.0)	A (8.1)	9	11	118	126
			WBR	180		153		A (9.0)		11		126	
		Intersection		1,303		1,197		F (98.4)					
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	NBL	1	348	1	341	C (34.3)	D (38.9)	0	82	6	397
			NBT	287		283		D (39.6)		81		396	
			NBR	60		57		D (35.3)		82		397	
		SB	SBL	129	381	84	249	F (265.3)	F (211.8)	383	383	500	500
			SBT	135		86		F (248.6)		383		500	
			SBR	117		79		F (114.8)		16		223	
		EB	EBL	168	1,023	157	957	C (20.0)	B (12.1)	43	44	233	236
			EBT	268		249		A (8.3)		43		233	
			EBR	587		551		B (11.5)		44		236	
		WB	WBL	161	486	163	489	D (41.0)	D (36.3)	44	75	283	293
			WBT	144		147		D (37.6)		71		288	
			WBR	181		179		C (31.0)		75		293	
		Intersection		2,238		2,036		D (46.8)					
204	15th Street and Eads Street (Signalized)	NB	NBL	5	403	6	375	C (32.2)	B (15.0)	22	22	212	212
			NBT	184		171		C (25.1)		22		212	
			NBR	214		198		A (5.8)		3		97	
		SB	SBL	206	362	202	356	E (70.6)	E (57.6)	75	75	232	235
			SBT	155		148		D (41.5)		75		232	
			SBR	1		6		B (18.4)		65		235	
		EB	EBL	30	875	31	846	E (79.6)	E (61.6)	89	313	623	899
			EBT	790		757		E (64.6)		313		899	
			EBR	55		58		B (13.2)		286		873	
		WB	WBL	92	573	87	575	D (42.2)	C (25.0)	37	41	205	217
			WBT	347		359		C (23.9)		37		205	
			WBR	134		129		B (16.4)		41		217	
		Intersection		2,213		2,152		D (43.1)					

Intersection Performance

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ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
205	15th Street and Bell Street (Unsignalized)	EB	EBT	599	743	600	744	A (1.3)	A (1.4)	1	1	146	146
			EBR	144		144		A (1.7)		1		130	
		WB	WBT	428	428	452	452	B (11.5)	B (11.5)	2	2	71	71
		Intersection		1,171		1,196		A (5.2)					
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	EB	EBT	599	599	597	597	B (14.7)	B (14.7)	8	8	189	189
		WB	WBT	428	458	439	439	A (0.3)	A (0.3)	1	1	178	178
			WBR	30		0		- (-)		-		-	
		Intersection		1,057		1,036		A (8.6)					
207	15th Street and Crystal Dr (Signalized)	NB	NBL	405	816	394	803	C (27.1)	C (20.8)	60	60	334	334
			NBT	411		409		B (14.8)		60		334	
		SB	SBT	154	207	137	183	C (21.9)	C (21.2)	16	16	152	157
			SBR	53		46		B (19.3)		16		157	
		EB	EBL	412	599	415	596	B (18.2)	B (15.9)	76	77	205	207
			EBR	187		181		B (10.6)		77		207	
		Intersection		1,622		1,582		B (19.0)					
208	18th Street and Eads Street (Signalized)	NB	NBL	52	379	44	314	B (19.4)	B (17.1)	16	16	206	206
			NBT	184		155		B (14.6)		16		206	
			NBR	143		115		B (19.7)		13		203	
		SB	SBL	62	166	63	158	B (18.5)	B (12.6)	6	6	127	127
			SBT	104		95		A (8.7)		6		127	
		EB	EBL	215	951	214	938	C (25.8)	C (21.7)	52	52	282	282
			EBT	648		639		C (20.2)		52		282	
			EBR	88		85		C (22.9)		8		123	
		WB	WBL	124	176	119	169	D (39.9)	C (34.2)	20	20	127	127
			WBT	48		47		C (20.5)		20		127	
			WBR	4		3		C (27.5)		20		127	
		Intersection		1,672		1,579		C (21.2)					

Intersection Performance

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ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
209	18th Street and Bell Street (Signalized)	NB	NBL	68	87	66	84	C (30.1)	C (26.8)	8	8	112	112
			NBR	19		18		B (14.9)		7		112	
		SB	SBL	150	208	158	216	C (32.7)	C (28.5)	26	26	186	189
			SBT	45		44		B (18.7)		26		186	
			SBR	13		14		B (11.4)		23		189	
		EB	EBT	664	853	640	822	B (14.2)	B (14.9)	49	49	388	389
			EBR	189		182		B (17.4)		48		389	
		WB	WBT	95	95	91	91	A (9.7)	A (9.7)	4	4	65	65
		Intersection		1,243		1,213		B (17.7)					
210	18th Street and Crystal Dr (Signalized)	NB	NBL	51	688	51	679	B (12.8)	A (8.6)	2	24	51	377
			NBT	627		619		A (8.3)		23		373	
			NBR	10		9		A (5.9)		24		377	
		SB	SBT	303	360	288	344	A (5.1)	A (4.9)	6	7	162	167
			SBR	57		56		A (3.7)		7		167	
		EB	EBL	163	471	153	446	D (41.2)	C (31.1)	91	92	302	304
			EBT	135		128		D (37.7)		91		302	
			EBR	173		165		B (16.6)		92		304	
		WB	WBL	83	142	81	140	D (44.0)	D (42.2)	31	31	210	212
			WBT	50		51		D (39.7)		31		210	
			WBR	9		8		D (39.2)		29		212	
		Intersection		1,661		1,609		B (17.0)					
211	20th Street and Eads Street (Signalized)	NB	NBL	18	476	14	387	B (12.6)	A (3.9)	3	3	130	130
			NBT	345		279		A (2.4)		3		130	
			NBR	113		94		A (7.0)		3		130	
		SB	SBL	27	198	28	191	B (19.1)	B (12.2)	9	9	151	161
			SBT	159		151		B (11.5)		9		151	
			SBR	12		12		A (5.2)		9		161	
		EB	EBL	32	63	35	63	B (18.8)	B (18.8)	5	5	69	69
			EBT	29		26		B (19.7)		5		69	
			EBR	2		2		A (8.1)		4		68	
		WB	WBL	238	244	221	227	C (25.8)	C (25.6)	28	29	187	189
			WBT	4		4		C (24.4)		28		187	
			WBR	2		2		A (10.0)		29		189	
		Intersection		981		868		B (12.5)					

Intersection Performance

AM Peak Hour | 2025 No-Build AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
212	20th Street and Bell Street (Unsignalized)	NB	NBL	103	164	95	153	C (15.6)	B (14.3)	15	15	98	99
			NBT	17		17		C (16.5)		14		99	
			NBR	44		41		B (10.4)		14		98	
		SB	SBL	191	235	185	232	B (14.6)	B (13.1)	19	19	142	142
			SBR	44		47		A (7.4)		1		77	
		EB	EBL	58	223	52	207	A (1.1)	A (2.2)	0	1	62	64
			EBT	137		129		A (2.0)		1		64	
			EBR	28		26		A (5.5)		1		53	
		WB	WBL	3	119	3	123	A (1.7)	A (5.6)	1	2	91	128
			WBT	104		107		A (6.1)		2		128	
			WBR	12		13		A (3.1)		1		93	
		Intersection		741		715		A (8.9)					
213	20th Street and Crystal Dr (Signalized)	NB	NBL	116	783	118	793	B (20.0)	B (10.6)	12	64	201	219
			NBT	634		645		A (9.1)		59		211	
			NBR	33		30		A (6.3)		64		219	
		SB	SBL	82	559	75	535	D (44.6)	B (15.1)	15	21	131	255
			SBT	401		379		B (10.3)		21		253	
			SBR	76		81		A (9.9)		21		255	
		EB	EBL	45	265	41	257	C (23.7)	C (22.7)	13	29	200	205
			EBT	153		148		C (24.4)		27		200	
			EBR	67		68		B (18.5)		29		205	
		WB	WBT	7	13	8	13	B (16.6)	B (14.3)	1	1	26	29
			WBR	6		5		B (10.6)		1		29	
		Intersection		1,620		1,598		B (14.1)					

Intersection Performance

AM Peak Hour | 2025 No-Build AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
214	23rd Street and Eads Street (Signalized)	NB	NBL	81	684	55	478	F (82.0)	F (119.3)	338	338	495	495
			NBT	357		253		F (93.9)		338		495	
			NBR	246		170		F (169.1)		338		495	
		SB	SBL	105	488	100	456	E (70.3)	C (32.5)	59	59	330	330
			SBT	348		321		C (23.5)		59		330	
			SBR	35		35		A (6.6)		1		56	
		EB	EBL	42	392	41	370	F (127.4)	F (136.0)	299	299	800	800
			EBT	325		303		F (139.3)		299		800	
			EBR	25		26		F (110.7)		298		800	
		WB	WBL	144	221	135	216	C (30.2)	C (22.1)	17	17	135	142
			WBT	60		63		B (10.2)		17		135	
			WBR	17		18		A (2.8)		9		142	
		Intersection		1,785		1,520		F (83.5)					
215	23rd Street and Crystal Drive (Signalized)	NB	NBL	212	880	205	881	B (15.7)	C (20.1)	86	91	433	443
			NBT	559		571		C (23.9)		86		433	
			NBR	109		105		A (7.8)		91		443	
		SB	SBL	61	381	57	362	B (13.5)	B (11.8)	17	17	157	160
			SBT	308		290		B (11.5)		17		157	
			SBR	12		15		B (12.1)		16		160	
		EB	EBL	0	399	5	381	D (39.5)	C (20.1)	39	41	329	335
			EBT	209		197		C (28.0)		39		329	
			EBR	190		179		B (11.0)		41		335	
		WB	WBL	75	126	76	125	C (33.2)	C (25.0)	11	11	104	104
			WBT	13		12		C (22.8)		11		104	
			WBR	38		37		A (9.0)		2		64	
		Intersection		1,786		1,749		B (18.7)					

Intersection Performance

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**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
101	15th Street and Route 1 Southbound Ramp (Signalized)	SB	SBL	553	1,116	548	1,095	E (59.2)	D (48.6)	193	193	901	901
			SBR	563		547		D (37.9)		193		901	
		EB	EBT	1,019	1,037	962	980	C (26.7)	C (26.4)	65	65	366	366
			EBR	18		18		A (6.8)		50		365	
		WB	WBL	18	214	16	208	C (25.9)	A (8.6)	5	5	81	81
			WBT	196		192		A (7.2)		5		81	
		Intersection		2,367		2,283		D (35.4)					
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	NBL	43	43	42	42	C (27.7)	C (27.7)	5	5	76	76
		EB	EBL	761	1,573	707	1,503	D (44.1)	C (26.9)	157	157	320	320
			EBT	812		796		B (11.6)		157		320	
		WB	WBT	171	669	166	600	A (9.8)	A (9.7)	29	33	148	153
			WBR	498		434		A (9.6)		33		153	
		Intersection		2,285		2,145		C (22.1)					
103	20th Street and Route 1 (Signalized)	NB	NBT	2,488	2,556	2,358	2,418	B (13.1)	B (13.1)	63	63	368	368
			NBR	68		60		B (12.2)		63		368	
		SB	SBL	140	1,726	133	1,648	E (70.1)	C (24.4)	101	101	348	348
			SBT	1,561		1,492		C (20.4)		101		348	
			SBR	25		23		B (19.5)		101		348	
		EB	EBL	194	366	166	315	E (63.4)	D (45.7)	61	61	245	245
			EBT	61		51		E (58.5)		61		245	
			EBR	111		98		A (8.9)		4		107	
		WB	WBL	122	397	114	366	E (65.6)	D (38.0)	55	55	218	223
			WBT	110		99		E (61.4)		55		218	
			WBR	165		153		A (2.4)		55		223	
		Intersection		5,045		4,747		C (21.1)					

Intersection Performance

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**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
104A	23rd Street and Clark Street (Signalized)	NB	NBL	20	176	19	174	D (41.8)	C (28.5)	25	27	194	198
			NBT	41		42		D (41.9)		25		194	
			NBR	116		113		C (21.3)		27		198	
		SB	SBL	3	375	3	370	C (26.1)	C (26.8)	37	42	253	261
			SBT	109		104		D (37.3)		37		253	
			SBR	263		263		C (22.7)		42		261	
		EB	EBL	49	1,024	36	845	A (8.3)	B (12.2)	60	64	379	392
			EBT	172		160		A (8.2)		60		379	
			EBR	802		649		B (13.4)		64		392	
		WB	WBT	304	359	272	326	B (14.4)	B (12.9)	10	10	171	171
			WBR	55		54		A (5.7)		9		171	
		Intersection		1,934		1,715		B (17.2)					
104	23rd Street and Route 1 (Signalized)	NB	NBL	82	2,409	63	2,129	F (222.7)	F (165.1)	39	1,312	174	1,844
			NBT	2,250		2,003		F (162.3)		1,312		1,844	
			NBR	77		63		F (197.8)		1,312		1,844	
		SB	SBL	526	1,793	498	1,691	F (111.6)	D (42.8)	185	185	590	590
			SBT	1,267		1,193		B (14.1)		185		590	
		EB	EBL	216	763	141	510	D (50.0)	D (47.3)	170	170	270	271
			EBT	421		285		E (57.0)		170		270	
			EBR	126		84		A (9.9)		170		271	
		WB	WBL	237	587	217	552	E (64.7)	D (54.5)	142	142	360	360
			WBT	260		244		E (56.6)		14		299	
			WBR	90		91		C (24.8)		114		344	
		Intersection		4,965		4,330		F (110.4)					
201	12th Street and Eads Street (Signalized)	NB	NBL	48	512	43	468	C (22.2)	B (13.4)	23	23	256	260
			NBT	279		258		B (12.8)		23		256	
			NBR	185		167		B (12.1)		23		260	
		SB	SBL	194	754	184	743	C (33.2)	C (30.0)	157	160	759	764
			SBT	317		315		C (29.9)		157		759	
			SBR	243		244		C (27.7)		160		764	
		EB	EBL	81	489	69	414	F (175.6)	F (152.5)	451	456	639	643
			EBT	374		312		F (148.2)		451		639	
			EBR	34		33		F (145.3)		456		643	
		WB	WBL	70	133	61	115	E (65.6)	D (52.6)	26	39	136	155
			WBT	45		38		D (45.8)		26		136	
			WBR	18		16		B (19.0)		39		155	
		Intersection		1,888		1,740		E (56.2)					

Intersection Performance

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**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
202	12th Street and Army Navy Dr (Signalized)	NB	NBL	1	25	1	21	F (141.9)	F (185.2)	26	26	110	110
			NBR	24		20		F (187.3)		26		110	
		SB	SBL	585	587	445	445	F (389.3)	F (389.3)	821	821	1,094	1,094
			SBT	2		0		- (-)		-		-	
		EB	EBT	737	753	675	689	C (30.4)	C (30.4)	85	85	256	256
			EBR	16		14		C (30.2)		85		256	
		WB	WBT	48	167	30	104	A (5.3)	A (9.7)	5	6	104	112
			WBR	119		74		B (11.5)		6		112	
		Intersection		1,532		1,259		F (158.1)					
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	NBT	330	400	321	389	D (43.7)	D (42.7)	106	107	440	441
			NBR	70		68		D (38.2)		107		441	
		SB	SBL	171	443	74	194	F (335.6)	F (276.5)	416	416	485	485
			SBT	158		67		F (314.8)		416		485	
			SBR	114		53		F (145.4)		6		119	
		EB	EBL	309	1,346	263	1,161	C (28.9)	B (16.1)	84	85	234	237
			EBT	407		344		A (5.2)		84		234	
			EBR	630		554		B (16.9)		85		237	
		WB	WBL	182	362	167	337	E (55.9)	D (53.8)	66	68	278	278
			WBT	53		52		E (65.7)		63		272	
			WBR	127		118		D (45.5)		68		277	
		Intersection		2,551		2,081		D (51.5)					
204	15th Street and Eads Street (Signalized)	NB	NBL	377	921	342	828	D (43.0)	C (31.7)	153	153	563	563
			NBT	259		228		D (35.6)		153		563	
			NBR	285		258		B (13.3)		4		125	
		SB	SBL	139	428	138	425	D (54.5)	D (54.0)	85	85	264	266
			SBT	269		265		E (55.8)		85		264	
			SBR	20		22		C (29.0)		83		266	
		EB	EBL	98	837	98	811	F (92.1)	D (52.5)	169	232	671	747
			EBT	613		589		D (54.9)		232		747	
			EBR	126		124		A (9.8)		196		724	
		WB	WBL	65	759	58	736	D (45.4)	C (28.0)	59	65	247	259
			WBT	556		549		C (27.3)		59		247	
			WBR	138		129		C (23.2)		65		259	
		Intersection		2,945		2,800		D (40.1)					

Intersection Performance

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ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
205	15th Street and Bell Street (Signalized)	NB	NBT	100	100	96	96	C (30.1)	C (30.1)	14	14	140	140
		SB	SBT	100	100	106	106	C (32.1)	C (32.1)	18	18	152	152
		EB	EBT	600	812	580	790	A (5.3)	A (4.5)	13	13	159	159
			EBR	212		210		A (2.2)		13		159	
		WB	WBL	5	684	5	616	D (48.3)	C (28.9)	116	120	313	317
			WBT	669		601		C (28.7)		116		313	
			WBR	10		10		C (29.0)		120		317	
		Intersection		1,696		1,608		B (17.2)					
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	EB	EBT	600	600	578	578	A (7.3)	A (7.3)	5	5	175	175
		WB	WBT	684	684	603	603	A (8.8)	A (8.8)	15	15	210	210
		Intersection		1,284		1,181		A (8.1)					
207	15th Street and Crystal Dr (Signalized)	NB	NBL	556	948	505	870	B (15.8)	A (9.8)	26	26	229	229
			NBT	392		365		A (1.6)		26		229	
		SB	SBT	266	394	207	308	C (21.5)	C (22.2)	30	30	313	317
			SBR	128		101		C (23.7)		30		317	
		EB	EBL	315	600	298	575	D (37.1)	C (26.1)	80	82	260	262
			EBR	285		277		B (14.3)		82		262	
		Intersection		1,942		1,753		B (17.3)					
208	18th Street and Eads Street (Signalized)	NB	NBL	79	647	64	533	C (22.9)	C (22.5)	61	61	322	326
			NBT	384		322		C (20.6)		61		322	
			NBR	184		147		C (26.3)		47		326	
		SB	SBL	81	329	80	322	C (22.4)	B (10.8)	11	11	152	152
			SBT	248		242		A (7.0)		11		152	
		EB	EBL	320	1,230	300	1,144	F (87.9)	E (64.1)	289	289	668	668
			EBT	822		763		E (56.0)		289		668	
			EBR	88		81		D (52.4)		129		599	
		WB	WBL	71	342	63	309	D (43.5)	D (35.8)	40	40	187	187
			WBT	55		48		B (19.1)		40		187	
			WBR	216		198		D (37.4)		40		187	
		Intersection		2,548		2,308		D (43.3)					

Intersection Performance

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ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
209	18th Street and Bell Street (Signalized)	NB	NBL	147	152	129	134	D (36.0)	D (35.4)	21	21	163	163
			NBR	5		5		C (20.1)		16		158	
		SB	SBL	216	292	215	292	E (60.6)	D (51.6)	82	82	414	417
			SBT	68		69		C (27.1)		82		414	
			SBR	8		8		C (20.9)		81		417	
		EB	EBT	881	1,086	826	1,021	C (24.9)	C (25.5)	111	112	526	528
			EBR	205		195		C (28.1)		112		528	
		WB	WBL	1	188	1	174	B (10.1)	A (7.5)	5	5	72	72
			WBT	187		173		A (7.5)		5		72	
		Intersection		1,718		1,621		C (29.1)					
210	18th Street and Crystal Dr (Signalized)	NB	NBL	110	777	101	699	D (41.5)	C (23.4)	20	84	270	482
			NBT	665		597		C (20.4)		81		477	
			NBR	2		1		A (7.4)		84		482	
		SB	SBL	34	559	29	500	D (36.7)	C (20.2)	4	63	52	226
			SBT	443		398		B (19.7)		60		221	
			SBR	82		73		B (16.2)		63		226	
		EB	EBL	180	596	170	553	D (43.6)	D (36.3)	121	123	314	316
			EBT	166		153		D (37.8)		121		314	
			EBR	250		230		C (29.8)		123		316	
		WB	WBL	131	225	130	219	D (50.8)	D (47.6)	60	60	256	258
			WBT	83		79		D (42.6)		60		256	
			WBR	11		10		D (46.6)		59		258	
		Intersection		2,157		1,971		C (28.9)					
211	20th Street and Eads Street (Signalized)	NB	NBL	29	803	25	648	B (12.9)	B (15.2)	50	50	500	500
			NBT	562		452		B (14.5)		50		500	
			NBR	212		171		B (17.4)		50		500	
		SB	SBL	154	292	144	279	C (25.8)	B (18.4)	20	20	165	165
			SBT	138		135		B (10.6)		20		165	
		EB	EBL	61	63	61	63	C (26.6)	C (26.5)	7	7	77	77
			EBT	1		1		C (30.3)		7		77	
			EBR	1		1		B (12.2)		7		75	
		WB	WBL	106	134	97	122	C (28.4)	C (25.9)	13	13	147	147
			WBT	3		3		C (28.2)		13		147	
			WBR	25		22		B (14.9)		13		146	
		Intersection		1,292		1,112		B (17.8)					

Intersection Performance

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ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
212	20th Street and Bell/Clark Street - Reconfigured (Unsignalized)	NB	NBL	221	261	210	249	C (24.0)	C (24.0)	32	32	203	204
			NBR	40		39		C (24.0)		31		204	
		SB	SBL	210	273	204	271	C (23.2)	C (19.6)	30	32	169	175
			SBT	0		9		C (18.2)		32		175	
			SBR	63		58		A (7.3)		4		106	
		EB	EBL	68	270	60	242	A (1.7)	A (4.3)	1	6	69	132
			EBT	159		143		A (5.7)		6		132	
			EBR	43		39		A (3.3)		1		84	
		WB	WBL	113	307	104	281	A (7.9)	A (6.1)	4	4	97	97
			WBT	111		102		A (5.3)		4		97	
			WBR	83		75		A (4.7)		4		97	
		Intersection		1,111		1,043		B (13.5)					
213	20th Street and Crystal Dr (Signalized)	NB	NBL	231	1,019	203	918	C (28.1)	B (13.4)	51	73	219	220
			NBT	732		668		A (9.3)		69		212	
			NBR	56		47		A (6.5)		73		220	
		SB	SBL	109	825	97	755	D (52.3)	C (22.0)	34	71	349	496
			SBT	541		491		B (17.8)		71		494	
			SBR	175		167		B (16.7)		71		496	
		EB	EBL	40	261	37	246	C (28.6)	C (25.6)	15	32	207	213
			EBT	207		196		C (25.6)		30		209	
			EBR	14		13		B (17.5)		32		213	
		WB	WBT	15	21	15	21	C (20.6)	B (18.9)	2	2	47	51
			WBR	6		6		B (14.9)		2		51	
		Intersection		2,126		1,940		B (18.3)					

Intersection Performance

AM Peak Hour | 2040 No-Build AM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
214	23rd Street and Eads Street (Signalized)	NB	NBL	89	1,007	66	741	E (56.2)	E (73.6)	325	325	503	503
			NBT	597		443		E (64.7)		325		503	
			NBR	321		232		F (95.3)		325		503	
		SB	SBL	65	268	63	254	E (57.7)	C (29.2)	19	19	156	156
			SBT	154		145		C (24.2)		19		156	
			SBR	49		46		A (6.3)		1		64	
		EB	EBL	51	435	33	228	F (360.5)	F (462.3)	811	811	1,011	1,011
			EBT	376		190		F (478.9)		811		1,011	
			EBR	8		5		F (504.1)		811		1,011	
		WB	WBL	193	342	171	310	E (58.2)	D (41.4)	55	55	233	241
			WBT	96		88		C (29.1)		55		233	
			WBR	53		51		A (6.2)		54		241	
		Intersection		2,052		1,533		F (117.5)					
215	23rd Street and Crystal Drive (Signalized)	NB	NBL	249	1,214	213	1,059	E (73.2)	F (94.8)	532	541	1,089	1,099
			NBT	686		612		F (109.5)		532		1,089	
			NBR	279		234		E (76.1)		541		1,099	
		SB	SBL	53	453	47	410	B (12.9)	A (9.2)	16	16	257	261
			SBT	369		330		A (8.8)		16		257	
			SBR	31		33		A (7.7)		16		261	
		EB	EBL	0	291	2	275	E (56.6)	C (28.9)	40	43	255	262
			EBT	198		181		D (37.4)		40		255	
			EBR	93		92		B (11.6)		43		262	
		WB	WBL	122	253	123	251	D (46.3)	D (39.0)	34	34	166	171
			WBT	79		76		D (36.5)		34		166	
			WBR	52		52		C (25.3)		19		171	
		Intersection		2,211		1,995		E (61.1)					

Appendix E
PM Individual Vissim Intersection Results

Intersection Performance

PM Peak Hour | Existing PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
101	15th Street and Route 1 Southbound Ramp (Signalized)	SB	SBL	240	1,135	239	1,089	D (50.8)	D (42.3)	222	222	789	789
			SBR	895		850		D (39.9)		222		789	
		EB	EBT	410	490	409	493	C (25.1)	C (22.8)	26	26	179	179
			EBR	80		84		B (11.7)		22		179	
		WB	WBL	40	415	36	398	B (19.4)	A (2.2)	4	4	50	50
			WBT	375		362		A (0.5)		4		50	
		Intersection		2,040		1,980		C (29.4)					
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	NBL	205	270	196	264	D (37.7)	C (29.3)	41	50	249	262
			NBR	65		68		A (5.0)		50		262	
		EB	EBL	355	650	345	647	B (11.9)	A (9.1)	0	76	13	296
			EBT	295		302		A (5.9)		76		296	
		WB	WBT	210	585	201	570	C (21.6)	B (11.9)	28	28	128	131
			WBR	375		369		A (6.6)		28		131	
		Intersection		1,505		1,481		B (13.8)					
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion)	NB	NBT	1,535	1,604	1,534	1,615	A (0.3)	A (0.3)	8	32	259	259
			NBR-20th St	40		37		A (0.0)		32		163	
			NBR-Clark	28		44		A (0.0)		32		163	
		SB	SBL-20th	77	1,665	52	1,581	E (55.0)	D (37.3)	165	165	573	573
			SBL-Clark	38		59		E (55.9)		165		573	
			SBT	1,550		1,470		D (35.9)		165		573	
		WB	WBL-Route 1	205	455	195	439	D (52.9)	D (54.9)	78	78	248	248
			WBL-Clark	40		42		D (51.7)		78		248	
			WBR-Route 1	210		202		E (57.5)		78		248	
		Intersection		3,724		3,635		C (23.0)					
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Portion)	NB	NBL	80	1,625	74	1,618	F (101.7)	D (41.7)	244	244	872	872
			NBT	1,545		1,544		D (38.8)		103		724	
		SB	SBT	1,620	1,755	1,525	1,655	A (4.4)	A (4.1)	18	18	166	166
			SBR	135		130		A (0.3)		0		46	
		EB	EBL	75	230	72	217	E (72.5)	D (37.8)	23	40	153	194
			EBR	155		145		C (20.6)		40		194	
		Intersection		3,610		3,490		C (23.6)					
103	Combined Intersection							C (23.3)					

Intersection Performance

PM Peak Hour | Existing PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion)	SB	SBL	10	145	10	153	D (53.4)	E (55.0)	40	40	160	160
			SBT	50		55		E (56.3)		25		160	
			SBR	85		88		D (54.4)		40		160	
		EB	EBT	125	325	132	332	A (1.0)	A (0.9)	0	1	98	143
			EBR	200		200		A (0.8)		1		143	
		WB	WBL	60	645	62	654	E (58.4)	D (53.2)	106	106	345	345
			WBT	585		592		D (52.7)		106		345	
		Intersection		1,115		1,139		D (38.2)					
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion)	NB	NBL	180	1,595	181	1,608	F (118.8)	E (55.8)	133	133	375	429
			NBT	1,325		1,332		D (48.4)		129		429	
			NBR	90		95		D (39.2)		129		429	
		SB	SBL	95	1,775	88	1,646	E (61.7)	D (52.2)	321	337	770	826
			SBT	1,635		1,517		D (51.6)		321		770	
			SBR	45		41		E (58.0)		337		826	
		EB	EBL	80	655	83	645	E (69.4)	D (36.5)	80	80	272	272
			EBT	140		149		D (45.4)		80		272	
			EBR	435		413		C (26.6)		76		271	
		WB	WBL	165	670	168	686	A (5.1)	A (2.8)	4	4	114	114
			WBT	285		296		A (2.2)		4		114	
			WBR	220		222		A (1.7)		3		114	
		Intersection		4,025		3,899		D (51.6)					
104	Combined Intersection							D (54.7)					
201	12th Street and Eads Street (Signalized)	NB	NBL	40	510	38	502	B (18.3)	B (12.0)	32	32	341	346
			NBT	405		403		B (12.3)		32		341	
			NBR	65		61		A (6.1)		32		346	
		SB	SBL	55	305	54	306	C (21.2)	B (16.2)	25	26	216	218
			SBT	215		219		B (15.7)		25		216	
			SBR	35		33		B (11.7)		26		218	
		EB	EBL	110	295	108	302	C (31.6)	C (24.5)	30	33	233	236
			EBT	105		108		C (22.8)		30		233	
			EBR	80		86		B (17.8)		33		236	
		WB	WBL	85	390	86	384	C (31.1)	C (23.9)	39	47	252	264
			WBT	220		212		C (22.3)		39		252	
			WBR	85		86		C (20.8)		47		264	
		Intersection		1,500		1,494		B (18.5)					

Intersection Performance

PM Peak Hour | Existing PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
202	12th Street and Army Navy Dr (Unsignalized)	NB	NBL	5	15	5	15	A (10.0)	A (7.9)	1	1	57	57
			NBR	10		10		A (6.9)		1		55	
		SB	SBL	195	235	197	235	C (17.2)	C (15.5)	9	9	139	139
			SBT	5		4		A (9.2)		9		139	
			SBR	35		34		A (6.5)		9		139	
		EB	EBL	10	225	13	224	A (3.3)	A (0.7)	1	1	75	75
			EBT	200		196		A (0.5)		0		26	
			EBR	15		15		A (0.8)		0		71	
		WB	WBT	210	825	205	811	A (1.4)	A (1.6)	1	2	186	217
			WBR	615		606		A (1.6)		2		217	
		Intersection		1,300		1,285		A (4.0)					
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	NBL	175	270	174	268	C (32.7)	C (25.3)	29	29	194	194
			NBT	65		62		B (13.9)		5		83	
			NBR	30		32		A (7.4)		5		85	
		SB	SBL	55	380	57	380	B (17.7)	B (13.1)	13	13	148	148
			SBT	105		104		B (16.0)		13		148	
			SBR	220		219		B (10.5)		10		139	
		EB	EBL	145	405	149	402	C (33.0)	B (18.5)	27	27	201	201
			EBT	155		156		B (13.2)		27		201	
			EBR	105		97		A (4.6)		23		179	
		WB	WBL	25	555	26	542	B (18.6)	B (18.3)	2	66	47	289
			WBT	430		419		B (18.5)		63		286	
			WBR	100		97		B (17.2)		66		289	
		Intersection		1,610		1,592		B (18.3)					
204	15th Street and Eads Street (Signalized)	NB	NBL	55	395	57	395	C (34.1)	C (21.2)	40	40	330	330
			NBT	255		257		C (22.9)		40		330	
			NBR	85		81		A (6.7)		2		73	
		SB	SBL	100	425	109	431	C (27.3)	C (22.0)	38	38	276	280
			SBT	285		282		C (20.7)		38		276	
			SBR	40		40		B (16.4)		38		280	
		EB	EBL	60	435	65	442	C (30.9)	B (15.9)	7	21	101	176
			EBT	305		306		B (14.9)		21		176	
			EBR	70		71		A (6.2)		6		135	
		WB	WBL	340	1,270	326	1,208	C (30.9)	C (20.2)	60	64	286	298
			WBT	660		627		B (16.2)		60		286	
			WBR	270		255		B (16.4)		64		298	
		Intersection		2,525		2,476		B (19.9)					

Intersection Performance

PM Peak Hour | Existing PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
205	15th Street and Bell Street (Unsignalized)	EB	EBT	350	360	344	356	A (0.6)	A (0.6)	0	0	76	76
			EBR	10		12		A (0.7)		0		38	
		WB	WBT	585	585	570	570	A (4.4)	A (4.4)	2	2	81	81
		Intersection		945		926		A (2.9)					
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	SB	SBR	215	215	205	205	A (1.0)	A (1.0)	0	0	29	29
		EB	EBT	350	350	342	342	A (1.7)	A (1.7)	0	0	12	12
		WB	WBT	370	370	375	375	A (0.3)	A (0.3)	0	0	0	0
		Intersection		935		922		A (1.0)					
207	15th Street and Crystal Dr (Signalized)	NB	NBL	310	690	316	693	B (13.8)	B (13.2)	32	32	207	207
			NBT	380		377		B (12.7)		32		207	
		SB	SBT	155	215	157	217	C (22.2)	C (20.9)	25	25	234	238
			SBR	60		60		B (17.3)		24		238	
		EB	EBL	120	350	110	343	C (27.0)	B (15.9)	21	23	149	152
			EBR	230		233		B (10.7)		23		152	
		Intersection		1,255		1,253		B (15.3)					
208	18th Street and Eads Street (Signalized)	NB	NBL	80	385	78	374	C (29.0)	B (16.3)	28	28	224	224
			NBT	275		268		B (13.8)		28		224	
			NBR	30		28		A (4.8)		0		61	
		SB	SBL	35	625	35	613	C (20.0)	B (16.4)	63	64	363	367
			SBT	555		547		B (16.3)		63		363	
			SBR	35		31		B (13.9)		64		367	
		EB	EBL	50	455	51	454	C (30.3)	C (32.3)	17	54	184	275
			EBT	165		170		C (21.7)		17		184	
			EBR	240		233		D (40.4)		54		275	
		WB	WBL	65	340	62	344	C (30.5)	C (23.2)	24	26	130	135
			WBT	205		208		C (23.6)		24		130	
			WBR	70		74		B (15.9)		26		135	
		Intersection		1,805		1,785		C (21.7)					

Intersection Performance

PM Peak Hour | Existing PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
209	18th Street and Bell Street (Signalized)	NB	NBL	55	70	53	67	C (28.4)	C (25.6)	6	6	85	85
			NBT	10		9		B (18.3)		6		85	
			NBR	5		5		A (9.5)		3		85	
		SB	SBL	15	190	25	210	C (28.5)	C (21.8)	22	22	167	170
			SBT	130		129		C (21.5)		22		167	
			SBR	45		56		B (19.4)		20		170	
		EB	EBL	15	230	14	234	B (12.9)	B (10.7)	8	8	159	159
			EBT	160		168		B (10.9)		8		159	
			EBR	55		52		A (9.4)		7		156	
		WB	WBL	25	285	23	280	A (7.0)	A (5.0)	6	6	84	84
			WBT	240		238		A (4.8)		6		84	
			WBR	20		19		A (4.2)		4		83	
		Intersection		775		791		B (12.9)					
210	18th Street and Crystal Dr (Signalized)	NB	NBL	115	630	113	615	C (27.8)	B (16.2)	14	43	208	439
			NBT	505		494		B (13.7)		42		436	
			NBR	10		8		A (6.1)		43		439	
		SB	SBL	10	395	10	401	C (28.5)	B (15.3)	1	41	30	196
			SBT	310		318		B (15.8)		38		191	
			SBR	75		73		B (11.3)		41		196	
		EB	EBL	70	200	67	214	B (16.0)	B (12.5)	9	11	136	139
			EBT	5		5		B (12.8)		9		136	
			EBR	125		142		B (10.9)		11		139	
		WB	WBL	5	25	5	25	B (19.8)	B (14.0)	1	1	35	37
			WBT	10		10		B (14.9)		1		35	
			WBR	10		10		B (10.1)		1		37	
		Intersection		1,250		1,255		B (15.2)					
211	20th Street and Eads Street (Signalized)	NB	NBL	10	310	11	303	C (29.5)	C (20.5)	35	37	274	281
			NBT	230		226		C (21.0)		35		274	
			NBR	70		66		B (17.4)		37		281	
		SB	SBL	125	805	119	788	C (20.3)	B (16.2)	63	67	367	375
			SBT	660		651		B (15.6)		63		367	
			SBR	20		18		B (11.2)		67		375	
		EB	EBL	5	55	5	55	C (23.5)	B (15.9)	4	4	69	70
			EBT	35		34		B (17.7)		4		69	
			EBR	15		16		A (9.6)		4		70	
		WB	WBL	95	215	90	205	C (22.8)	B (17.1)	15	16	137	138
			WBT	40		44		C (21.5)		15		137	
			WBR	80		71		A (7.1)		16		138	
		Intersection		1,385		1,351		B (17.3)					

Intersection Performance

PM Peak Hour | Existing PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
212	20th Street and Bell Street (Unsignalized)	NB	NBL	10	30	9	30	C (15.4)	B (11.7)	1	1	50	54
			NBT	10		9		B (13.2)		1		54	
			NBR	10		12		A (8.0)		1		50	
		SB	SBL	50	210	51	211	B (11.8)	B (12.2)	16	20	152	175
			SBT	5		4		B (12.7)		20		175	
			SBR	155		156		B (12.3)		4		114	
		EB	EBL	30	95	28	89	A (1.3)	A (2.1)	0	0	58	62
			EBT	60		57		A (2.3)		0		62	
			EBR	5		4		A (3.4)		0		51	
		WB	WBL	5	325	6	338	A (2.9)	A (8.4)	7	10	202	207
			WBT	290		302		A (8.8)		10		207	
			WBR	30		30		A (5.0)		7		206	
		Intersection		660		668		A (8.9)					
213	20th Street and Crystal Dr (Signalized)	NB	NBL	105	550	107	552	C (22.7)	B (13.1)	10	32	128	189
			NBT	435		436		B (10.9)		29		180	
			NBR	10		9		A (5.7)		32		189	
		SB	SBL	20	440	22	464	C (26.7)	C (23.9)	1	73	44	398
			SBT	360		369		C (23.8)		72		395	
			SBR	60		73		C (23.7)		73		398	
		EB	EBL	40	110	39	112	C (26.1)	B (16.4)	4	4	86	86
			EBT	5		6		C (22.0)		2		72	
			EBR	65		67		B (10.3)		3		78	
		WB	WBL	15	275	16	276	C (25.6)	B (13.1)	13	15	133	136
			WBT	105		105		C (20.2)		13		133	
			WBR	155		155		A (6.9)		15		136	
		Intersection		1,375		1,404		B (16.9)					

Intersection Performance

PM Peak Hour | Existing PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
214	23rd Street and Eads Street (Signalized)	NB	NBL	25	340	26	333	C (26.1)	B (17.5)	21	21	223	223
			NBT	195		187		B (15.2)		21		223	
			NBR	120		120		B (19.2)		21		223	
		SB	SBL	235	820	224	805	C (32.4)	C (21.4)	67	67	356	356
			SBT	530		525		B (17.9)		67		356	
			SBR	55		56		B (11.0)		3		111	
		EB	EBL	20	405	21	413	C (25.8)	B (19.5)	37	39	306	311
			EBT	300		304		C (20.1)		37		306	
			EBR	85		88		B (16.0)		39		311	
		WB	WBL	85	510	87	520	C (24.8)	B (17.3)	44	44	310	311
			WBT	325		331		B (19.6)		44		310	
			WBR	100		102		A (3.4)		43		311	
		Intersection		2,075		2,071		B (19.4)					
215	23rd Street and Crystal Drive (Signalized)	NB	NBL	260	610	266	619	D (36.5)	C (34.4)	80	80	388	396
			NBT	335		341		C (33.8)		80		388	
			NBR	15		12		A (4.9)		79		396	
		SB	SBL	20	440	20	445	C (29.1)	D (41.3)	149	151	320	324
			SBT	265		263		D (44.0)		149		320	
			SBR	155		162		D (38.6)		151		324	
		EB	EBL	60	115	62	119	D (42.4)	C (30.2)	16	16	137	143
			EBT	15		14		D (45.1)		16		137	
			EBR	40		43		A (7.6)		12		143	
		WB	WBL	25	240	26	240	D (44.9)	C (34.0)	32	32	160	160
			WBT	150		150		D (42.4)		32		160	
			WBR	65		64		A (9.9)		18		159	
		Intersection		1,405		1,423		D (36.1)					

Intersection Performance

PM Peak Hour | 2025 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
101	15th Street and Route 1 Southbound Ramp (Signalized)	SB	SBL	179	949	176	886	D (48.0)	C (31.1)	79	79	305	305
			SBR	770		710		C (26.9)		79		305	
		EB	EBT	490	590	494	596	D (35.9)	C (32.8)	58	58	389	390
			EBR	100		102		B (17.9)		56		390	
		WB	WBL	0	512	33	461	D (45.2)	A (4.0)	7	7	57	57
			WBT	512		428		A (0.8)		7		57	
		Intersection		2,051		1,943		C (25.2)					
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	NBL	183	183	171	171	C (20.3)	C (20.3)	18	18	175	175
		EB	EBL	463	669	457	670	B (14.6)	B (10.7)	0	46	26	322
			EBT	206		213		A (2.5)		46		322	
		WB	WBT	328	612	289	594	D (37.4)	C (22.7)	44	46	127	130
			WBR	284		305		A (8.7)		46		130	
		Intersection		1,464		1,435		B (16.8)					
103N	20th Street and Route 1/Clark Street (Signalized) (Northern Portion)	NB	NBT	1,529	1,662	1,488	1,617	A (0.3)	A (0.2)	18	51	326	326
			NBR-20th St	133		120		A (0.0)		51		168	
			NBR-Clark	0		9		A (0.0)		51		168	
		SB	SBL-20th	173	2,029	144	1,900	F (88.2)	D (37.3)	220	220	608	608
			SBL-Clark	0		9		E (80.0)		220		608	
			SBT	1,856		1,747		C (32.8)		220		608	
		WB	WBL-Route 1	406	781	381	729	D (45.3)	D (47.3)	126	126	259	259
			WBL-Clark	50		43		C (34.1)		126		259	
			WBR-Route 1	325		305		D (51.7)		126		259	
		Intersection		4,472		4,246		C (24.9)					
103S	20th Street and Route 1/Clark Street (Signalized) (Southern Portion)	NB	NBL	26	1,551	26	1,510	E (72.6)	D (38.2)	224	224	787	787
			NBT	1,525		1,484		D (37.6)		144		711	
		SB	SBT	1,892	2,261	1,791	2,127	A (1.2)	A (1.1)	5	5	155	179
			SBR	369		336		A (1.1)		3		179	
		EB	EBL	136	143	136	144	F (133.0)	F (128.6)	39	58	166	206
			EBR	7		8		D (53.3)		58		206	
		Intersection		3,955		3,781		C (20.8)					
103	Combined Intersection							C (23.0)					

Intersection Performance

PM Peak Hour | 2025 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
104E	23rd Street and Route 1/Clark Street (Signalized) (Eastern Portion)	SB	SBL	2	75	2	74	E (59.9)	E (70.3)	25	25	183	183
			SBT	52		49		E (67.5)		15		183	
			SBR	21		23		E (77.2)		25		183	
		EB	EBT	198	407	207	408	A (0.7)	A (0.7)	0	1	100	114
			EBR	209		201		A (0.7)		1		114	
		WB	WBL	16	782	15	730	E (64.5)	D (47.5)	124	124	465	465
			WBT	766		715		D (47.2)		124		465	
		Intersection		1,264		1,212		C (33.2)					
104W	23rd Street and Route 1/Clark Street (Signalized) (Western Portion)	NB	NBL	193	1,630	186	1,609	F (220.6)	E (62.3)	280	280	664	664
			NBT	1,330		1,313		D (42.6)		121		528	
			NBR	107		110		C (30.4)		121		528	
		SB	SBL	86	1,888	80	1,768	D (47.3)	C (24.0)	124	124	632	632
			SBT	1,802		1,688		C (22.9)		124		632	
		EB	EBL	65	727	69	708	E (75.5)	D (43.0)	122	122	286	286
			EBT	215		217		E (57.6)		122		286	
			EBR	447		422		C (30.2)		119		285	
		WB	WBL	189	787	170	739	A (8.8)	A (3.9)	5	5	109	110
			WBT	435		428		A (2.7)		5		109	
			WBR	163		141		A (1.4)		2		110	
		Intersection		4,245		4,085		D (43.1)					
104	Combined Intersection							D (53.2)					
201	12th Street and Eads Street (Signalized)	NB	NBL	55	632	55	634	B (19.4)	B (16.2)	79	79	371	374
			NBT	554		557		B (16.2)		79		371	
			NBR	23		22		A (8.7)		79		374	
		SB	SBT	198	202	201	205	B (16.1)	B (16.0)	17	19	186	192
			SBR	4		4		A (9.2)		19		192	
		EB	EBL	66	113	66	112	E (70.1)	E (60.3)	31	33	162	164
			EBT	45		45		D (46.9)		31		162	
			EBR	2		1		B (18.9)		33		164	
		WB	WBL	156	435	152	417	F (80.6)	D (47.9)	122	140	448	466
			WBT	166		154		D (46.2)		122		448	
			WBR	113		111		A (5.5)		140		466	
		Intersection		1,382		1,368		C (29.4)					

Intersection Performance

PM Peak Hour | 2025 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
202	12th Street and Army Navy Dr (Signalized)	NB	NBL	7	22	7	22	E (64.7)	E (69.0)	8	8	110	110
			NBR	15		15		E (71.0)		8		110	
		SB	SBL	155	159	155	160	E (75.9)	E (75.3)	55	55	205	205
			SBT	4		5		E (57.8)		55		205	
		EB	EBT	29	68	35	75	E (63.8)	E (62.4)	22	22	122	122
			EBR	39		40		E (61.2)		22		122	
		WB	WBT	224	654	216	629	A (5.9)	A (7.8)	23	28	220	233
			WBR	430		413		A (8.8)		28		233	
		Intersection		903		886		C (26.1)					
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	NBL	163	374	161	373	F (147.8)	F (80.4)	160	160	438	438
			NBT	52		51		D (42.5)		30		319	
			NBR	159		161		C (25.1)		31		320	
		SB	SBL	31	566	30	566	D (47.9)	D (41.6)	127	127	652	652
			SBT	337		345		D (42.8)		127		652	
			SBR	198		191		D (38.4)		36		316	
		EB	EBL	82	199	83	205	B (12.1)	A (7.4)	6	6	56	56
			EBT	69		71		A (5.5)		6		56	
			EBR	48		51		A (2.5)		3		52	
		WB	WBL	56	536	54	511	D (37.3)	D (36.6)	17	136	259	307
			WBT	293		283		D (38.6)		131		301	
			WBR	187		174		C (33.0)		136		307	
		Intersection		1,675		1,655		D (44.6)					
204	15th Street and Eads Street (Signalized)	NB	NBL	79	309	80	312	E (63.8)	D (52.3)	89	89	453	453
			NBT	230		232		D (48.3)		89		453	
		SB	SBL	94	455	91	443	F (118.8)	F (83.7)	201	203	447	452
			SBT	350		340		E (76.8)		201		447	
			SBR	11		12		B (12.0)		203		452	
		EB	EBL	84	663	86	666	C (29.4)	B (19.9)	11	48	222	372
			EBT	496		499		B (18.5)		48		372	
			EBR	83		81		B (18.2)		26		353	
		WB	WBL	218	1,281	254	1,129	B (18.3)	B (15.7)	48	51	290	302
			WBT	626		451		B (12.6)		48		290	
			WBR	437		424		B (17.5)		51		302	
		Intersection		2,708		2,550		C (33.1)					

Intersection Performance

PM Peak Hour | 2025 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
205	15th Street and Bell Street (Unsignalized)	EB	EBT	174	206	172	207	A (0.6)	A (0.7)	0	0	93	93
			EBR	32		35		A (1.4)		0		59	
		WB	WBT	612	612	595	595	A (8.4)	A (8.4)	2	2	89	89
		Intersection		818		802		A (6.4)					
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	SB	SBR	226	226	234	234	A (0.6)	A (0.6)	0	0	0	0
		EB	EBT	174	174	169	169	A (4.1)	A (4.1)	0	0	10	10
		WB	WBT	386	386	370	370	A (0.2)	A (0.2)	0	0	0	0
		Intersection		786		773		A (1.2)					
207	15th Street and Crystal Dr (Signalized)	NB	NBL	322	711	308	680	A (4.2)	A (3.2)	6	6	93	93
			NBT	389		372		A (2.5)		6		93	
		SB	SBT	127	191	126	187	B (10.1)	B (10.5)	8	8	190	194
			SBR	64		61		B (11.5)		8		194	
		EB	EBL	63	174	60	169	F (85.1)	D (39.3)	32	32	160	160
			EBR	111		109		B (14.1)		32		160	
		Intersection		1,076		1,036		B (10.4)					
208	18th Street and Eads Street (Signalized)	NB	NBL	97	454	94	443	D (43.4)	C (23.0)	50	50	277	277
			NBT	241		242		C (21.4)		50		277	
			NBR	116		107		A (8.6)		4		161	
		SB	SBT	450	450	479	479	B (12.3)	B (12.3)	35	35	342	342
		EB	EBL	13	697	13	692	D (35.1)	C (32.9)	52	58	326	326
			EBT	434		435		C (28.3)		52		326	
			EBR	250		244		D (41.1)		58		321	
		WB	WBL	228	534	210	506	E (55.2)	D (37.0)	65	65	282	287
			WBT	251		241		C (25.1)		65		282	
			WBR	55		55		B (19.5)		64		287	
		Intersection		2,135		2,120		C (27.1)					

Intersection Performance

PM Peak Hour | 2025 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
209	18th Street and Bell Street (Signalized)	NB	NBL	163	187	145	164	D (44.8)	D (42.8)	32	32	191	191
			NBR	24		19		C (27.7)		29		188	
		SB	SBL	0	226	12	239	D (49.2)	C (21.0)	22	22	170	173
			SBT	122		122		C (22.0)		22		170	
			SBR	104		105		B (16.6)		21		173	
		EB	EBT	304	551	297	534	A (9.9)	B (16.1)	36	37	311	313
			EBR	247		237		C (24.0)		37		313	
		WB	WBL	32	336	32	328	B (18.0)	B (11.1)	14	14	116	116
			WBT	267		260		B (10.4)		14		116	
			WBR	37		36		A (10.0)		12		115	
		Intersection		1,300		1,265		B (19.2)					
210	18th Street and Crystal Dr (Signalized)	NB	NBL	47	561	44	500	A (8.5)	A (7.5)	1	16	44	300
			NBT	420		374		A (7.6)		15		296	
			NBR	94		82		A (6.7)		16		300	
		SB	SBL	66	359	65	356	B (11.6)	A (7.1)	2	10	65	149
			SBT	210		210		A (6.5)		9		144	
			SBR	83		81		A (5.0)		10		149	
		EB	EBL	91	368	88	369	E (55.7)	C (34.8)	65	68	256	259
			EBT	77		79		D (52.4)		65		256	
			EBR	200		202		B (18.8)		68		259	
		WB	WBL	13	78	13	79	E (60.4)	D (41.4)	15	15	119	123
			WBT	34		34		D (47.5)		15		119	
			WBR	31		32		C (27.1)		13		123	
		Intersection		1,366		1,304		B (17.2)					
211	20th Street and Eads Street (Signalized)	NB	NBL	4	281	5	278	C (22.1)	B (16.0)	24	26	238	245
			NBT	228		224		B (16.4)		24		238	
			NBR	49		49		B (13.3)		26		245	
		SB	SBL	85	771	82	768	B (18.6)	B (19.2)	71	71	365	365
			SBT	604		608		B (19.0)		71		365	
			SBR	82		78		C (21.2)		71		365	
		EB	EBL	37	81	36	82	C (22.9)	B (17.3)	5	6	83	85
			EBT	11		12		B (16.3)		5		83	
			EBR	33		34		B (11.8)		6		85	
		WB	WBL	202	403	185	363	C (21.0)	B (17.6)	29	30	172	173
			WBT	115		99		B (20.0)		29		172	
			WBR	86		79		A (6.7)		30		173	
		Intersection		1,536		1,491		B (18.1)					

Intersection Performance

PM Peak Hour | 2025 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
212	20th Street and Bell Street (Unsignalized)	NB	NBL	47	60	47	61	E (45.1)	E (40.3)	11	11	108	108
			NBR	13		14		C (24.0)		9		107	
		SB	SBL	71	400	70	393	F (58.1)	F (68.7)	148	148	511	511
			SBR	329		323		F (71.0)		119		475	
		EB	EBL	8	294	8	264	A (3.9)	A (4.0)	1	2	99	103
			EBT	208		182		A (3.5)		1		103	
			EBR	78		74		A (5.3)		2		99	
		WB	WBL	29	598	26	553	A (3.5)	C (17.9)	36	40	296	303
			WBT	391		372		C (20.8)		40		303	
			WBR	178		155		B (13.4)		37		303	
		Intersection		1,352		1,271		C (31.8)					
213	20th Street and Crystal Dr (Signalized)	NB	NBL	298	760	244	659	D (48.1)	C (26.9)	110	110	218	218
			NBT	462		415		B (14.4)		68		207	
		SB	SBL	26	423	28	426	C (27.1)	C (24.2)	2	62	57	449
			SBT	327		318		C (25.0)		62		449	
			SBR	70		80		C (20.1)		60		449	
		EB	EBL	38	221	31	203	C (22.1)	C (24.4)	18	19	164	165
			EBT	34		29		C (20.9)		18		164	
			EBR	149		143		C (25.7)		19		165	
		WB	WBL	173	354	170	353	C (26.2)	B (18.9)	25	25	168	172
			WBT	119		120		B (15.3)		25		168	
			WBR	62		63		A (6.1)		21		172	
		Intersection		1,758		1,641		C (24.2)					

Intersection Performance

PM Peak Hour | 2025 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
214	23rd Street and Eads Street (Signalized)	NB	NBL	56	586	53	544	D (38.0)	D (37.6)	106	106	302	302
			NBT	311		289		C (29.5)		106		302	
			NBR	219		202		D (49.2)		106		302	
		SB	SBL	148	854	144	843	D (39.4)	C (25.3)	96	96	352	352
			SBT	608		601		C (23.1)		96		352	
			SBR	98		98		B (17.7)		8		227	
		EB	EBL	2	457	3	457	E (60.5)	E (62.9)	245	249	775	780
			EBT	351		350		E (63.2)		245		775	
			EBR	104		104		E (62.1)		249		780	
		WB	WBL	179	628	169	612	C (34.3)	B (18.9)	108	108	292	293
			WBT	381		371		B (14.5)		108		292	
			WBR	68		72		A (5.6)		107		293	
		Intersection		2,525		2,456		C (33.4)					
215	23rd Street and Crystal Drive (Signalized)	NB	NBL	294	817	225	643	E (61.9)	F (103.2)	682	708	1,039	1,069
			NBT	521		417		F (125.7)		682		1,039	
			NBR	2		1		C (25.8)		708		1,069	
		SB	SBL	92	599	90	583	B (12.2)	B (17.3)	44	44	296	298
			SBT	491		469		B (18.6)		44		296	
			SBR	16		24		B (10.7)		44		298	
		EB	EBL	53	141	56	148	F (146.9)	F (81.5)	42	42	179	179
			EBT	50		50		E (61.8)		42		179	
			EBR	38		42		B (17.6)		36		177	
		WB	WBL	23	400	23	402	E (70.5)	E (58.4)	87	87	286	292
			WBT	291		295		E (59.1)		87		286	
			WBR	86		84		D (52.4)		77		292	
		Intersection		1,957		1,776		E (63.0)					

Intersection Performance

PM Peak Hour | 2040 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
101	15th Street and Route 1 Southbound Ramp (Signalized)	SB	SBL	203	1,199	169	973	D (49.6)	D (36.4)	109	109	424	424
			SBR	996		804		C (33.7)		109		424	
		EB	EBT	619	857	590	814	D (38.2)	C (31.3)	109	109	401	402
			EBR	238		224		B (13.0)		108		402	
		WB	WBT	659	659	560	560	B (11.2)	B (11.2)	33	33	249	249
		Intersection		2,715		2,347		C (28.6)					
102	15th Street and Route 1 Northbound Ramp (Signalized)	NB	NBL	245	245	211	211	D (38.9)	D (38.9)	45	45	293	293
		EB	EBL	554	823	529	761	C (28.0)	C (21.6)	1	73	46	321
			EBT	269		232		A (7.2)		73		321	
		WB	WBT	414	803	345	614	B (11.6)	A (8.8)	73	75	150	152
			WBR	389		269		A (5.2)		75		152	
		Intersection		1,871		1,586		B (19.0)					
103	20th Street and Route 1 (Signalized)	NB	NBL	52	1,942	39	1,679	E (79.7)	D (44.7)	351	351	904	904
			NBT	1,824		1,583		D (43.8)		351		904	
			NBR	66		57		D (45.6)		351		904	
		SB	SBL	273	2,452	218	2,017	F (156.0)	D (50.5)	735	735	1,321	1,321
			SBT	2,060		1,702		D (37.4)		735		1,321	
			SBR	119		97		D (43.1)		735		1,321	
		EB	EBL	94	279	89	260	F (86.5)	D (51.0)	0	46	0	193
			EBT	35		37		E (78.2)		46		193	
			EBR	150		134		B (19.8)		15		163	
		WB	WBL	271	720	221	589	D (51.0)	E (59.5)	116	116	298	298
			WBT	133		106		E (57.9)		116		298	
			WBR	316		262		E (67.3)		116		298	
		Intersection		5,393		4,545		D (49.5)					

Intersection Performance

PM Peak Hour | 2040 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
104A	23rd Street and Clark Street (Signalized)	NB	NBL	42	47	44	48	D (44.3)	D (42.1)	5	5	88	92
			NBR	5		4		B (17.8)		3		92	
		SB	SBL	2	429	2	411	C (23.4)	E (77.1)	277	280	545	547
			SBT	51		48		C (30.4)		277		545	
			SBR	376		361		F (83.6)		280		547	
		EB	EBL	41	552	38	498	B (15.3)	B (19.6)	45	45	296	297
			EBT	274		256		B (14.7)		45		296	
			EBR	237		204		C (26.7)		45		297	
		WB	WBL	200	855	111	479	C (20.1)	B (17.9)	23	23	253	257
			WBT	564		315		B (18.2)		23		253	
			WBR	91		53		B (12.1)		23		257	
		Intersection		1,883		1,436		D (36.2)					
104	23rd Street and Route 1 (Signalized)	NB	NBL	124	1,882	120	1,708	F (96.7)	E (62.5)	68	315	255	1,075
			NBT	1,567		1,397		E (60.5)		315		1,075	
			NBR	191		191		E (55.3)		315		1,075	
		SB	SBL	125	2,481	102	2,055	F (86.3)	D (36.8)	284	284	915	915
			SBT	2,356		1,953		C (34.2)		284		915	
		EB	EBL	101	688	91	603	D (45.0)	D (38.7)	71	71	263	264
			EBT	237		207		D (54.7)		71		263	
			EBR	350		305		C (26.0)		71		264	
		WB	WBL	212	982	148	721	E (59.2)	E (58.1)	162	162	374	399
			WBT	497		376		E (67.1)		20		399	
			WBR	273		197		D (40.0)		145		356	
		Intersection		5,051		4,366		E (56.7)					
201	12th Street and Eads Street (Signalized)	NB	NBT	437	489	396	439	C (29.4)	C (27.5)	90	90	376	379
			NBR	52		43		B (10.3)		90		379	
		SB	SBL	65	199	62	188	F (88.9)	F (88.8)	102	106	380	386
			SBT	132		124		F (88.2)		102		380	
			SBR	2		2		F (122.4)		106		386	
		EB	EBL	264	463	205	361	F (118.9)	F (103.8)	236	239	321	324
			EBT	54		40		F (82.6)		236		321	
			EBR	145		116		F (84.4)		239		324	
		WB	WBL	253	492	211	419	F (108.9)	E (68.2)	210	229	463	482
			WBT	125		108		D (46.0)		210		463	
			WBR	114		100		A (6.4)		229		482	
		Intersection		1,643		1,407		E (67.4)					

Intersection Performance

PM Peak Hour | 2040 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
202	12th Street and Army Navy Dr (Signalized)	NB	NBL	20	24	21	25	E (68.0)	E (68.7)	8	8	114	114
			NBR	4		4		E (72.7)		8		114	
		SB	SBL	193	193	84	84	F (679.2)	F (679.2)	1,055	1,055	1,084	1,084
		EB	EBT	123	171	116	155	C (30.4)	C (30.1)	23	23	166	166
			EBR	48		39		C (29.3)		23		166	
		WB	WBT	256	786	218	668	A (7.3)	A (9.7)	33	38	239	252
			WBR	530		450		B (10.9)		38		252	
		Intersection		1,174		932		E (75.0)					
203	12th Street and Long Bridge Dr / Clark Street (Signalized)	NB	NBL	207	387	193	368	F (135.2)	F (92.6)	193	193	447	447
			NBT	57		55		D (44.8)		39		282	
			NBR	123		120		D (45.8)		39		282	
		SB	SBL	147	669	134	628	E (74.9)	E (68.9)	485	485	739	739
			SBT	297		289		E (72.4)		485		739	
			SBR	225		205		E (59.9)		150		732	
		EB	EBL	110	319	71	204	D (35.6)	B (14.6)	13	13	93	93
			EBT	205		123		A (3.3)		13		93	
			EBR	4		10		A (4.8)		2		59	
		WB	WBL	3	576	4	442	C (28.6)	C (31.4)	0	93	19	290
			WBT	354		277		C (32.9)		89		284	
			WBR	219		161		C (28.7)		93		290	
		Intersection		1,951		1,642		E (57.3)					
204	15th Street and Eads Street (Signalized)	NB	NBL	203	447	192	425	F (86.0)	E (78.0)	211	211	545	545
			NBT	244		233		E (71.5)		211		545	
		SB	SBL	232	660	187	544	F (186.4)	F (104.1)	317	319	460	465
			SBT	362		299		E (70.1)		317		460	
			SBR	66		58		B (14.1)		319		465	
		EB	EBL	72	1,035	77	1,035	F (97.2)	C (32.6)	51	115	435	509
			EBT	624		621		C (29.1)		115		509	
			EBR	339		337		C (24.2)		105		499	
		WB	WBL	272	1,655	220	1,350	D (46.5)	D (36.4)	130	138	376	388
			WBT	1,091		899		C (34.1)		130		376	
			WBR	292		231		D (35.7)		138		388	
		Intersection		3,797		3,354		D (51.5)					

Intersection Performance

PM Peak Hour | 2040 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
205	15th Street and Bell Street (Signalized)	NB	NBT	100	227	103	227	D (47.9)	D (48.2)	66	66	187	187
			NBR	127		124		D (48.5)		66		187	
		SB	SBT	90	253	92	249	F (98.7)	F (101.3)	169	169	462	462
			SBR	163		157		F (102.8)		166		459	
		EB	EBT	269	269	229	229	A (4.3)	A (4.3)	4	4	111	111
		WB	WBL	0	640	5	463	E (57.6)	F (98.6)	314	314	388	388
			WBT	640		458		F (99.1)		314		388	
		Intersection		1,389		1,168		E (70.9)					
206	15th Street and 14 Rd S (Clark Street) (Unsignalized)	EB	EBT	396	396	355	355	A (5.4)	A (5.4)	1	1	46	46
		WB	WBT	640	640	448	448	E (47.6)	E (47.6)	161	161	247	247
		Intersection		1,036		803		C (28.9)					
207	15th Street and Crystal Dr (Signalized)	NB	NBL	510	864	347	590	F (128.9)	E (78.3)	210	210	377	377
			NBT	354		243		A (6.1)		210		377	
		SB	SBT	271	401	212	315	F (83.5)	F (101.7)	389	403	1,117	1,135
			SBR	130		103		F (139.3)		403		1,135	
		EB	EBL	135	396	117	356	D (50.8)	C (26.5)	42	42	182	182
			EBR	261		239		B (14.5)		42		182	
		Intersection		1,661		1,261		E (69.5)					
208	18th Street and Eads Street (Signalized)	NB	NBL	114	364	111	347	D (54.3)	C (33.9)	60	60	266	266
			NBT	236		223		C (25.5)		60		266	
			NBR	14		13		A (5.3)		3		73	
		SB	SBL	44	773	39	690	C (22.8)	B (16.0)	72	74	368	372
			SBT	690		621		B (15.8)		72		368	
			SBR	39		30		B (11.3)		74		372	
		EB	EBL	78	570	76	568	D (43.4)	D (42.8)	71	96	424	426
			EBT	149		158		C (31.4)		71		424	
			EBR	343		334		D (48.1)		96		426	
		WB	WBL	28	384	24	332	D (36.8)	C (30.5)	33	36	194	198
			WBT	223		188		C (31.5)		33		194	
			WBR	133		120		C (27.8)		36		198	
		Intersection		2,091		1,937		C (29.6)					

Intersection Performance

PM Peak Hour | 2040 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
209	18th Street and Bell Street (Signalized)	NB	NBL	42	113	32	93	D (37.2)	C (31.6)	14	14	152	152
			NBT	66		51		C (28.0)		14		152	
			NBR	5		10		C (32.2)		12		151	
		SB	SBL	0	79	13	93	D (41.0)	B (19.7)	9	9	104	104
			SBT	79		80		B (16.2)		9		104	
		EB	EBL	2	208	2	206	B (14.8)	B (12.2)	6	6	185	187
			EBT	99		103		A (10.0)		6		185	
			EBR	107		101		B (14.5)		6		187	
		WB	WBL	48	449	41	390	B (15.4)	B (10.8)	16	16	139	139
			WBT	342		299		B (10.1)		16		139	
			WBR	59		50		B (11.2)		14		138	
		Intersection		849		782		B (14.7)					
210	18th Street and Crystal Dr (Signalized)	NB	NBL	124	856	87	586	E (59.4)	E (74.2)	8	286	206	559
			NBT	570		394		F (92.8)		283		556	
			NBR	162		105		B (16.6)		286		559	
		SB	SBL	101	709	68	505	C (20.0)	C (24.7)	8	110	173	265
			SBT	542		390		C (26.8)		107		260	
			SBR	66		47		B (14.6)		110		265	
		EB	EBL	13	162	23	185	F (83.2)	D (53.1)	52	56	229	232
			EBT	106		104		E (60.5)		52		229	
			EBR	43		58		C (27.8)		56		232	
		WB	WBL	40	110	39	110	E (64.3)	E (62.8)	31	32	195	199
			WBT	14		14		E (60.9)		31		195	
			WBR	56		57		E (62.2)		32		199	
		Intersection		1,837		1,386		D (52.5)					
211	20th Street and Eads Street (Signalized)	NB	NBL	25	259	24	259	C (30.1)	B (18.6)	23	25	213	219
			NBT	164		164		B (18.9)		23		213	
			NBR	70		71		B (14.2)		25		219	
		SB	SBL	200	903	183	831	B (16.0)	B (13.4)	41	41	342	342
			SBT	642		597		B (12.5)		41		342	
			SBR	61		51		B (15.1)		41		342	
		EB	EBL	46	78	45	78	C (21.9)	B (18.2)	6	7	88	89
			EBT	8		8		B (18.6)		4		88	
			EBR	24		25		B (11.5)		7		89	
		WB	WBL	133	303	109	246	B (19.7)	B (17.9)	16	16	195	195
			WBT	115		93		C (20.5)		16		195	
			WBR	55		44		A (7.9)		15		193	
		Intersection		1,543		1,414		B (15.4)					

Intersection Performance

PM Peak Hour | 2040 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
212	20th Street and Bell/Clark Street - Reconfigured (Unsignalized)	NB	NBL	51	86	36	61	D (27.0)	C (22.8)	4	4	80	80
			NBT	17		12		C (18.9)		4		80	
			NBR	18		13		B (14.8)		4		80	
		SB	SBL	71	234	69	230	C (22.3)	C (19.8)	20	20	142	145
			SBT	0		8		D (28.1)		19		143	
			SBR	163		153		C (18.2)		14		145	
		EB	EBL	19	374	22	312	A (0.9)	A (6.1)	0	9	31	132
			EBT	332		272		A (6.8)		9		132	
			EBR	23		18		A (1.9)		1		73	
		WB	WBL	315	897	271	742	C (17.3)	C (19.9)	68	68	296	296
			WBT	506		413		C (22.0)		68		296	
			WBR	76		58		C (17.1)		68		296	
		Intersection		1,591		1,345		B (16.8)					
213	20th Street and Crystal Dr (Signalized)	NB	NBL	197	937	100	573	C (23.6)	C (28.3)	19	118	205	213
			NBT	714		462		C (29.7)		111		205	
			NBR	26		11		A (9.0)		118		213	
		SB	SBL	11	625	9	490	E (56.3)	E (63.0)	1	304	30	555
			SBT	338		260		E (65.4)		301		552	
			SBR	276		221		E (60.4)		304		555	
		EB	EBL	25	310	21	257	D (43.0)	C (34.4)	52	54	227	227
			EBT	56		44		C (32.0)		52		227	
			EBR	229		192		C (34.0)		54		227	
		WB	WBL	121	504	116	499	D (38.2)	C (21.1)	39	39	217	220
			WBT	266		262		B (18.6)		39		217	
			WBR	117		121		B (10.3)		39		220	
		Intersection		2,376		1,819		D (36.5)					

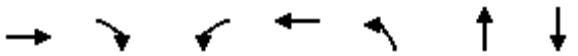
Intersection Performance

PM Peak Hour | 2040 No-Build PM

**Results show the average from 10 simulation runs.*

ID	Intersection	Approach	Movement	Balanced Count (vph)		Vissim Throughput (vph)		LOS* (Average Delay sec/veh)		Average Queue Length (feet)		Max Queue Length (feet)	
214	23rd Street and Eads Street (Signalized)	NB	NBL	70	389	69	380	C (29.9)	B (19.5)	25	25	231	265
			NBT	228		221		B (15.9)		25		231	
			NBR	91		90		C (20.5)		23		265	
		SB	SBL	207	805	186	742	C (21.3)	B (14.7)	36	36	298	298
			SBT	498		462		B (13.0)		36		298	
			SBR	100		94		B (10.2)		4		101	
		EB	EBL	3	715	11	606	E (65.5)	E (69.0)	828	834	992	998
			EBT	391		328		E (66.8)		828		992	
			EBR	321		267		E (71.8)		834		998	
		WB	WBL	143	622	112	501	C (24.5)	B (14.1)	26	26	201	202
			WBT	414		334		B (11.8)		26		201	
			WBR	65		55		A (7.0)		23		202	
		Intersection		2,531		2,229		C (30.1)					
215	23rd Street and Crystal Drive (Signalized)	NB	NBL	276	848	106	365	F (257.8)	F (302.9)	1,161	1,170	1,418	1,427
			NBT	568		252		F (325.3)		1,161		1,418	
			NBR	4		7		F (180.5)		1,170		1,427	
		SB	SBL	55	599	48	508	B (10.3)	C (25.4)	65	66	309	313
			SBT	398		329		C (30.9)		65		309	
			SBR	146		131		B (17.2)		66		313	
		EB	EBL	95	281	85	259	F (247.7)	F (125.8)	106	108	307	314
			EBT	164		153		E (69.9)		106		307	
			EBR	22		21		D (40.0)		108		314	
		WB	WBL	95	662	57	368	F (557.5)	F (459.5)	1,161	1,167	1,230	1,236
			WBT	433		241		F (472.0)		1,161		1,230	
			WBR	134		70		F (336.7)		1,167		1,236	
		Intersection		2,390		1,500		F (216.8)					

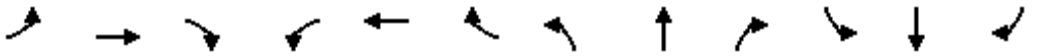
Appendix F
AM and PM Synchro Analysis Results



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	174	188	215	102	18	334	494
v/c Ratio	0.21	0.51	0.97	0.15	0.05	0.44	0.84
Control Delay	18.0	8.3	89.1	12.3	12.9	15.6	34.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	8.3	89.1	12.3	12.9	15.6	34.8
Queue Length 50th (ft)	59	0	112	22	5	100	216
Queue Length 95th (ft)	103	52	#248	54	17	169	#403
Internal Link Dist (ft)	676			644		1055	464
Turn Bay Length (ft)			45		95		
Base Capacity (vph)	813	370	222	703	335	758	589
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.51	0.97	0.15	0.05	0.44	0.84

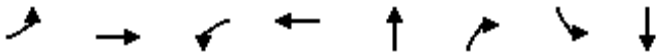
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	174	188	215	69	33	18	238	96	214	277	3
Future Volume (vph)	0	174	188	215	69	33	18	238	96	214	277	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	16	12	9	12	12	9	10	10	12	15	10
Total Lost time (s)		6.0	6.0	6.0	6.0		6.5	6.5			6.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.44	1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		0.96	1.00			1.00	
Frt		1.00	0.85	1.00	0.95		1.00	0.96			1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)		2111	661	1593	1772		1438	1597			1938	
Flt Permitted		1.00	1.00	0.65	1.00		0.48	1.00			0.64	
Satd. Flow (perm)		2111	661	1085	1772		723	1597			1271	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	174	188	215	69	33	18	238	96	214	277	3
RTOR Reduction (vph)	0	0	116	0	20	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	174	72	215	82	0	18	316	0	0	494	0
Confl. Peds. (#/hr)	36		376				65					65
Heavy Vehicles (%)	8%	2%	8%	2%	2%	2%	8%	8%	2%	2%	8%	8%
Turn Type		NA	Perm	custom	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases			4	7			2			2		
Actuated Green, G (s)		32.0	32.0	17.0	32.0		38.5	38.5			38.5	
Effective Green, g (s)		32.0	32.0	17.0	32.0		38.5	38.5			38.5	
Actuated g/C Ratio		0.39	0.39	0.20	0.39		0.46	0.46			0.46	
Clearance Time (s)		6.0	6.0	6.0	6.0		6.5	6.5			6.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		0.2	0.2			0.2	
Lane Grp Cap (vph)		813	254	222	683		335	740			589	
v/s Ratio Prot		0.08			0.05			0.20				
v/s Ratio Perm			c0.11	c0.20			0.02				c0.39	
v/c Ratio		0.21	0.29	0.97	0.12		0.05	0.43			0.84	
Uniform Delay, d1		17.1	17.6	32.7	16.4		12.2	14.9			19.5	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.0	0.2	50.6	0.0		0.3	1.8			13.4	
Delay (s)		17.1	17.8	83.3	16.5		12.5	16.7			32.9	
Level of Service		B	B	F	B		B	B			C	
Approach Delay (s)		17.5			61.8			16.5			32.9	
Approach LOS		B			E			B			C	

Intersection Summary				
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	83.0	Sum of lost time (s)	16.5	
Intersection Capacity Utilization	95.2%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	83	455	25	259	429	97	330	283
v/c Ratio	0.26	0.41	0.10	0.24	0.56	0.15	0.96	0.37
Control Delay	25.0	23.4	22.6	19.1	17.5	6.4	63.0	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	23.4	22.6	19.1	17.5	6.4	63.0	13.4
Queue Length 50th (ft)	34	102	10	47	136	12	144	75
Queue Length 95th (ft)	74	147	29	78	215	35	#319	126
Internal Link Dist (ft)		1060		662	767			1055
Turn Bay Length (ft)	85		70			30		
Base Capacity (vph)	317	1109	248	1077	848	689	377	844
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.41	0.10	0.24	0.51	0.14	0.88	0.34

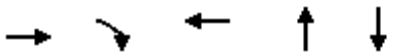
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	448	7	25	213	46	54	375	97	330	251	32
Future Volume (vph)	83	448	7	25	213	46	54	375	97	330	251	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	10	10	9	10	10	12	11	8	10	9	12
Total Lost time (s)	6.0	6.0		6.0	6.0			7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98			1.00	0.95	1.00	1.00	
Flpb, ped/bikes	0.95	1.00		0.98	1.00			1.00	1.00	0.98	1.00	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1430	3109		1468	2970			1687	1235	1533	1551	
Flt Permitted	0.59	1.00		0.45	1.00			0.92	1.00	0.43	1.00	
Satd. Flow (perm)	890	3109		697	2970			1566	1235	697	1551	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	83	448	7	25	213	46	54	375	97	330	251	32
RTOR Reduction (vph)	0	1	0	0	20	0	0	0	23	0	6	0
Lane Group Flow (vph)	83	454	0	25	239	0	0	429	74	330	277	0
Confl. Peds. (#/hr)	35		24	24		35	22		39	39		22
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Bus Blockages (#/hr)	0	0	0	0	3	3	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)	30.3	30.3		30.3	30.3			41.7	41.7	41.7	41.7	
Effective Green, g (s)	30.3	30.3		30.3	30.3			41.7	41.7	41.7	41.7	
Actuated g/C Ratio	0.36	0.36		0.36	0.36			0.49	0.49	0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0	7.0	7.0	7.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	317	1108		248	1058			768	605	341	760	
v/s Ratio Prot		c0.15			0.08						0.18	
v/s Ratio Perm	0.09			0.04				0.27	0.06	c0.47		
v/c Ratio	0.26	0.41		0.10	0.23			0.56	0.12	0.97	0.36	
Uniform Delay, d1	19.4	20.6		18.3	19.1			15.2	11.7	21.0	13.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.0	1.1		0.8	0.5			0.5	0.0	39.5	0.1	
Delay (s)	21.4	21.7		19.1	19.6			15.7	11.8	60.5	13.5	
Level of Service	C	C		B	B			B	B	E	B	
Approach Delay (s)		21.7			19.6			15.0			38.8	
Approach LOS		C			B			B			D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	893	155	162	613	283
v/c Ratio	0.76	0.27	0.22	1.02	0.39
Control Delay	25.4	9.4	11.4	65.4	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	9.4	11.4	65.4	17.6
Queue Length 50th (ft)	195	23	12	~301	93
Queue Length 95th (ft)	269	62	28	#521	155
Internal Link Dist (ft)	626		694	1383	767
Turn Bay Length (ft)		55			
Base Capacity (vph)	1177	577	751	603	721
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	0.27	0.22	1.02	0.39

Intersection Summary

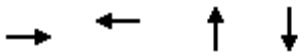
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	812	155	53	27	82	113	363	137	1	282	0
Future Volume (vph)	81	812	155	53	27	82	113	363	137	1	282	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	10	9	10	8	12	10	10	12	11	12
Grade (%)		0%			1%			1%			3%	
Total Lost time (s)		6.5	6.5		7.0			6.5			6.5	
Lane Util. Factor		0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.93		0.98			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.92			0.97			1.00	
Flt Protected		1.00	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		3210	1304		2760			1561			1675	
Flt Permitted		0.90	1.00		0.63			0.87			1.00	
Satd. Flow (perm)		2898	1304		1758			1369			1673	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	81	812	155	53	27	82	113	363	137	1	282	0
RTOR Reduction (vph)	0	0	48	0	49	0	0	13	0	0	0	0
Lane Group Flow (vph)	0	893	108	0	113	0	0	600	0	0	283	0
Confl. Peds. (#/hr)	14		22	22		14	7		18	18		7
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		32.5	32.5		32.0			34.5			34.5	
Effective Green, g (s)		32.5	32.5		32.0			34.5			34.5	
Actuated g/C Ratio		0.41	0.41		0.40			0.43			0.43	
Clearance Time (s)		6.5	6.5		7.0			6.5			6.5	
Vehicle Extension (s)		0.2	0.2		2.0			0.2			0.2	
Lane Grp Cap (vph)		1177	529		703			590			721	
v/s Ratio Prot												
v/s Ratio Perm		c0.31	0.08		0.06			c0.44			0.17	
v/c Ratio		0.76	0.20		0.16			1.02			0.39	
Uniform Delay, d1		20.4	15.4		15.4			22.8			15.6	
Progression Factor		1.00	1.00		1.29			1.00			1.00	
Incremental Delay, d2		2.5	0.1		0.5			41.3			0.1	
Delay (s)		22.9	15.4		20.4			64.1			15.7	
Level of Service		C	B		C			E			B	
Approach Delay (s)		21.8			20.4			64.1			15.7	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	113.3%	ICU Level of Service	H
Analysis Period (min)	15		

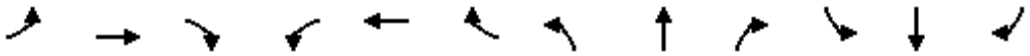
c Critical Lane Group



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	400	175	149	235
v/c Ratio	0.49	0.18	0.44	0.87
Control Delay	10.0	4.1	24.8	52.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.0	4.1	24.8	52.2
Queue Length 50th (ft)	83	24	50	84
Queue Length 95th (ft)	177	42	94	#175
Internal Link Dist (ft)	262	445	33	1383
Turn Bay Length (ft)				
Base Capacity (vph)	819	963	443	346
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.18	0.34	0.68

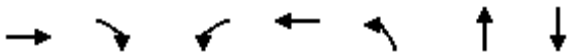
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



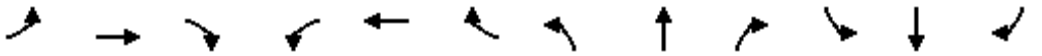
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	268	0	3	85	87	0	111	38	85	50	100
Future Volume (vph)	132	268	0	3	85	87	0	111	38	85	50	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	12	10	12	12	13	12
Grade (%)		-2%			2%			0%			3%	
Total Lost time (s)		5.5			5.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			0.97			0.98			0.98	
Flpb, ped/bikes		0.99			1.00			1.00			0.99	
Frt		1.00			0.93			0.97			0.94	
Flt Protected		0.98			1.00			1.00			0.98	
Satd. Flow (prot)		1452			1415			1562			1449	
Flt Permitted		0.84			1.00			1.00			0.77	
Satd. Flow (perm)		1236			1410			1562			1138	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	132	268	0	3	85	87	0	111	38	85	50	100
RTOR Reduction (vph)	0	0	0	0	29	0	0	18	0	0	39	0
Lane Group Flow (vph)	0	400	0	0	146	0	0	131	0	0	196	0
Confl. Peds. (#/hr)	20		10	10		20	10		18	18		10
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Parking (#/hr)	0	0	0	0	0	0				0	0	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		49.7			49.7			15.3			15.3	
Effective Green, g (s)		49.7			49.7			15.3			15.3	
Actuated g/C Ratio		0.66			0.66			0.20			0.20	
Clearance Time (s)		5.5			5.5			4.5			4.5	
Vehicle Extension (s)		0.2			0.2			2.0			2.0	
Lane Grp Cap (vph)		819			934			318			232	
v/s Ratio Prot								0.08				
v/s Ratio Perm		c0.32			0.10						c0.17	
v/c Ratio		0.49			0.16			0.41			0.84	
Uniform Delay, d1		6.3			4.8			25.9			28.7	
Progression Factor		1.00			1.23			1.00			1.00	
Incremental Delay, d2		2.1			0.4			0.3			22.7	
Delay (s)		8.4			6.2			26.3			51.4	
Level of Service		A			A			C			D	
Approach Delay (s)		8.4			6.2			26.3			51.4	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



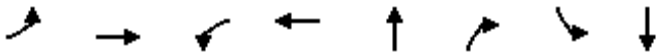
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	237	260	212	260	18	380	291
v/c Ratio	0.40	0.70	0.85	0.45	0.04	0.41	0.30
Control Delay	26.6	14.4	58.9	13.9	10.6	12.8	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	14.4	58.9	13.9	10.6	12.8	10.4
Queue Length 50th (ft)	110	0	115	56	4	97	61
Queue Length 95th (ft)	147	80	179	104	17	210	141
Internal Link Dist (ft)	676			644		1055	464
Turn Bay Length (ft)			45		95		
Base Capacity (vph)	1151	471	289	985	506	932	966
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.55	0.73	0.26	0.04	0.41	0.30

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	237	260	212	104	156	18	311	69	28	153	110
Future Volume (vph)	0	237	260	212	104	156	18	311	69	28	153	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	16	12	9	12	12	9	10	10	12	15	10
Total Lost time (s)		6.0	6.0	6.0	6.0		6.5	6.5			6.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.43	1.00	1.00		1.00	1.00			0.95	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		0.93	1.00			1.00	
Frt		1.00	0.85	1.00	0.91		1.00	0.97			0.95	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		2111	648	1593	1695		1395	1614			1746	
Flt Permitted		1.00	1.00	0.52	1.00		0.59	1.00			0.94	
Satd. Flow (perm)		2111	648	878	1695		872	1614			1655	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	237	260	212	104	156	18	311	69	28	153	110
RTOR Reduction (vph)	0	0	186	0	97	0	0	6	0	0	15	0
Lane Group Flow (vph)	0	237	74	212	163	0	18	374	0	0	276	0
Confl. Peds. (#/hr)	36		376				65					65
Heavy Vehicles (%)	8%	2%	8%	2%	2%	2%	8%	8%	2%	2%	8%	8%
Turn Type		NA	Perm	custom	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases			4	7			2			2		
Actuated Green, G (s)		24.9	24.9	24.9	24.9		50.6	50.6			50.6	
Effective Green, g (s)		24.9	24.9	24.9	24.9		50.6	50.6			50.6	
Actuated g/C Ratio		0.28	0.28	0.28	0.28		0.58	0.58			0.58	
Clearance Time (s)		6.0	6.0	6.0	6.0		6.5	6.5			6.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		0.2	0.2			0.2	
Lane Grp Cap (vph)		597	183	248	479		501	928			951	
v/s Ratio Prot		0.11			0.10			c0.23				
v/s Ratio Perm			0.11	c0.24			0.02				0.17	
v/c Ratio		0.40	0.40	0.85	0.34		0.04	0.40			0.29	
Uniform Delay, d1		25.5	25.5	29.8	25.0		8.1	10.3			9.5	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.2	0.5	23.1	0.2		0.1	1.3			0.8	
Delay (s)		25.6	26.1	52.9	25.2		8.2	11.7			10.3	
Level of Service		C	C	D	C		A	B			B	
Approach Delay (s)		25.9			37.6			11.5			10.3	
Approach LOS		C			D			B			B	

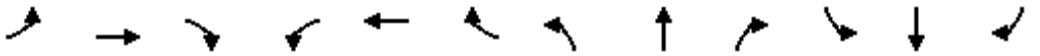
Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	88.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	111	323	22	757	368	22	218	530
v/c Ratio	0.64	0.26	0.06	0.63	0.51	0.04	0.66	0.79
Control Delay	45.6	19.1	20.4	23.6	17.8	1.4	26.6	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	19.1	20.4	23.6	17.8	1.4	26.6	25.9
Queue Length 50th (ft)	44	56	7	146	126	0	82	200
Queue Length 95th (ft)	#154	106	27	#293	150	5	123	245
Internal Link Dist (ft)		1060		662	767			1055
Turn Bay Length (ft)	85		70			30		
Base Capacity (vph)	174	1255	344	1209	946	729	435	873
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.26	0.06	0.63	0.39	0.03	0.50	0.61

Intersection Summary

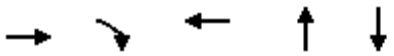
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	323	0	22	571	186	16	352	22	218	355	175
Future Volume (vph)	111	323	0	22	571	186	16	352	22	218	355	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	10	10	9	10	10	12	11	8	10	9	12
Total Lost time (s)	6.0	6.0		6.0	6.0			7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98			1.00	0.96	1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.97	1.00			1.00	1.00	0.98	1.00	
Frt	1.00	1.00		1.00	0.96			1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1475	3120		1460	2924			1696	1238	1531	1490	
Flt Permitted	0.28	1.00		0.56	1.00			0.97	1.00	0.47	1.00	
Satd. Flow (perm)	433	3120		855	2924			1646	1238	758	1490	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	111	323	0	22	571	186	16	352	22	218	355	175
RTOR Reduction (vph)	0	0	0	0	32	0	0	0	12	0	23	0
Lane Group Flow (vph)	111	323	0	22	725	0	0	368	10	218	507	0
Confl. Peds. (#/hr)	35		24	24		35	22		39	39		22
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Bus Blockages (#/hr)	0	0	0	0	3	3	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)	32.2	32.2		32.2	32.2			34.8	34.8	34.8	34.8	
Effective Green, g (s)	32.2	32.2		32.2	32.2			34.8	34.8	34.8	34.8	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.43	0.43	0.43	0.43	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0	7.0	7.0	7.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	174	1255		344	1176			716	538	329	648	
v/s Ratio Prot		0.10			0.25						c0.34	
v/s Ratio Perm	c0.26			0.03				0.22	0.01	0.29		
v/c Ratio	0.64	0.26		0.06	0.62			0.51	0.02	0.66	0.78	
Uniform Delay, d1	19.2	15.9		14.7	19.0			16.4	12.9	17.9	19.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.5	0.5		0.4	2.4			0.3	0.0	3.9	5.7	
Delay (s)	35.8	16.4		15.0	21.4			16.7	12.9	21.8	25.0	
Level of Service	D	B		B	C			B	B	C	C	
Approach Delay (s)		21.4			21.2			16.5			24.1	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

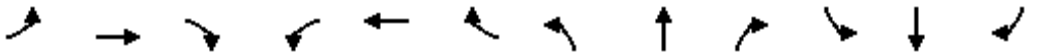
c Critical Lane Group



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	628	335	392	376	377
v/c Ratio	0.56	0.54	0.52	0.58	0.49
Control Delay	20.7	9.4	10.7	24.7	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	9.4	10.7	24.7	16.1
Queue Length 50th (ft)	112	28	26	145	108
Queue Length 95th (ft)	161	97	46	m188	180
Internal Link Dist (ft)	626		694	1383	767
Turn Bay Length (ft)		55			
Base Capacity (vph)	1130	615	757	711	837
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.54	0.52	0.53	0.45

Intersection Summary

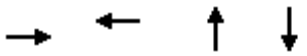
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	628	335	87	162	143	60	247	69	0	377	0
Future Volume (vph)	0	628	335	87	162	143	60	247	69	0	377	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	10	9	10	8	12	10	10	12	11	12
Grade (%)		0%			1%			1%			3%	
Total Lost time (s)		6.5	6.5		6.5			7.0			7.0	
Lane Util. Factor		0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.94		0.99			1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.95			0.98			1.00	
Flt Protected		1.00	1.00		0.99			0.99			1.00	
Satd. Flow (prot)		3231	1312		2850			1573			1675	
Flt Permitted		1.00	1.00		0.66			0.88			1.00	
Satd. Flow (perm)		3231	1312		1901			1399			1675	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	628	335	87	162	143	60	247	69	0	377	0
RTOR Reduction (vph)	0	0	156	0	93	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	628	179	0	299	0	0	364	0	0	377	0
Confl. Peds. (#/hr)	14		22	22		14	7		18	18		7
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Turn Type		NA	Perm	Perm	NA		Perm	NA			NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		24.5	24.5		24.5			32.0			32.0	
Effective Green, g (s)		24.5	24.5		24.5			32.0			32.0	
Actuated g/C Ratio		0.35	0.35		0.35			0.46			0.46	
Clearance Time (s)		6.5	6.5		6.5			7.0			7.0	
Vehicle Extension (s)		0.2	0.2		2.0			0.2			0.2	
Lane Grp Cap (vph)		1130	459		665			639			765	
v/s Ratio Prot		c0.19									0.23	
v/s Ratio Perm			0.14		0.16			c0.26				
v/c Ratio		0.56	0.39		0.45			0.57			0.49	
Uniform Delay, d1		18.4	17.1		17.5			13.9			13.3	
Progression Factor		1.00	1.00		0.73			1.59			1.00	
Incremental Delay, d2		0.3	0.2		2.2			0.7			0.2	
Delay (s)		18.7	17.3		15.0			22.8			13.5	
Level of Service		B	B		B			C			B	
Approach Delay (s)		18.2			15.0			22.8			13.5	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

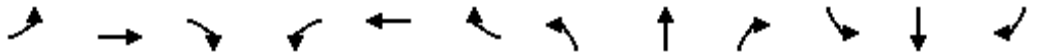
c Critical Lane Group



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	244	535	19	572
v/c Ratio	0.57	0.89	0.03	0.94
Control Delay	24.0	51.6	6.4	35.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.0	51.6	6.4	35.6
Queue Length 50th (ft)	84	280	2	137
Queue Length 95th (ft)	158	#601	11	#382
Internal Link Dist (ft)	262	445	33	1383
Turn Bay Length (ft)				
Base Capacity (vph)	431	599	727	644
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.89	0.03	0.89

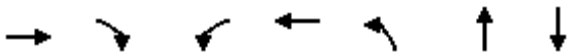
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	179	0	8	422	105	0	8	11	277	205	90
Future Volume (vph)	65	179	0	8	422	105	0	8	11	277	205	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	12	10	12	12	13	12
Grade (%)		-2%			2%			0%			3%	
Total Lost time (s)		5.5			5.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			0.99			0.97			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			0.98	
Frt		1.00			0.97			0.92			0.98	
Flt Protected		0.99			1.00			1.00			0.98	
Satd. Flow (prot)		1468			1506			1464			1504	
Flt Permitted		0.74			1.00			1.00			0.84	
Satd. Flow (perm)		1101			1500			1464			1288	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	179	0	8	422	105	0	8	11	277	205	90
RTOR Reduction (vph)	0	0	0	0	12	0	0	6	0	0	10	0
Lane Group Flow (vph)	0	244	0	0	523	0	0	13	0	0	562	0
Confl. Peds. (#/hr)	20		10	10		20	10		18	18		10
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Parking (#/hr)	0	0	0	0	0	0				0	0	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		27.4			27.4			32.6			32.6	
Effective Green, g (s)		27.4			27.4			32.6			32.6	
Actuated g/C Ratio		0.39			0.39			0.47			0.47	
Clearance Time (s)		5.5			5.5			4.5			4.5	
Vehicle Extension (s)		0.2			0.2			2.0			2.0	
Lane Grp Cap (vph)		430			587			681			599	
v/s Ratio Prot								0.01				
v/s Ratio Perm		0.22			c0.35						c0.44	
v/c Ratio		0.57			0.89			0.02			0.94	
Uniform Delay, d1		16.7			19.9			10.1			17.7	
Progression Factor		1.00			1.72			1.00			0.73	
Incremental Delay, d2		5.3			16.8			0.0			20.3	
Delay (s)		22.0			51.1			10.1			33.2	
Level of Service		C			D			B			C	
Approach Delay (s)		22.0			51.1			10.1			33.2	
Approach LOS		C			D			B			C	

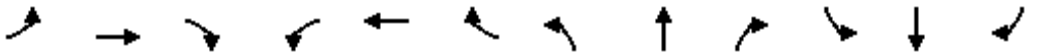
Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	220	197	55	166	118	522	524
v/c Ratio	0.38	0.60	0.29	0.32	0.32	0.58	0.66
Control Delay	25.4	12.4	27.6	15.3	9.4	10.8	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	12.4	27.6	15.3	9.4	10.8	17.2
Queue Length 50th (ft)	90	0	22	39	27	128	158
Queue Length 95th (ft)	139	61	47	81	m50	m243	310
Internal Link Dist (ft)	676			644		1055	464
Turn Bay Length (ft)			45		95		
Base Capacity (vph)	765	368	225	668	371	900	800
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.54	0.24	0.25	0.32	0.58	0.66

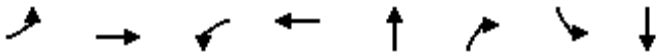
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	197	55	85	81	118	252	270	85	416	23
Future Volume (vph)	0	220	197	55	85	81	118	252	270	85	416	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	16	12	9	12	12	9	10	10	12	15	10
Total Lost time (s)		6.0	6.0	6.0	6.0		6.5	6.5			6.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.45	1.00	1.00		1.00	1.00			0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		0.96	1.00			1.00	
Frt		1.00	0.85	1.00	0.93		1.00	0.92			0.99	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)		2111	669	1593	1726		1442	1559			1915	
Flt Permitted		1.00	1.00	0.56	1.00		0.43	1.00			0.73	
Satd. Flow (perm)		2111	669	944	1726		652	1559			1402	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	220	197	55	85	81	118	252	270	85	416	23
RTOR Reduction (vph)	0	0	128	0	44	0	0	15	0	0	2	0
Lane Group Flow (vph)	0	220	69	55	122	0	118	507	0	0	522	0
Confl. Peds. (#/hr)	36		376				65					65
Heavy Vehicles (%)	8%	2%	8%	2%	2%	2%	8%	8%	2%	2%	8%	8%
Turn Type		NA	Perm	custom	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases			4	7			2			2		
Actuated Green, G (s)		27.9	27.9	13.5	27.9		39.6	39.6			39.6	
Effective Green, g (s)		27.9	27.9	13.5	27.9		39.6	39.6			39.6	
Actuated g/C Ratio		0.35	0.35	0.17	0.35		0.50	0.50			0.50	
Clearance Time (s)		6.0	6.0	6.0	6.0		6.5	6.5			6.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		0.2	0.2			0.2	
Lane Grp Cap (vph)		736	233	159	601		322	771			693	
v/s Ratio Prot		c0.10			0.07			0.33				
v/s Ratio Perm			0.10	0.06			0.18				c0.37	
v/c Ratio		0.30	0.29	0.35	0.20		0.37	0.66			0.75	
Uniform Delay, d1		18.9	18.9	29.4	18.3		12.5	15.1			16.3	
Progression Factor		1.00	1.00	1.00	1.00		0.73	0.75			1.00	
Incremental Delay, d2		0.1	0.3	0.5	0.1		2.6	3.6			7.4	
Delay (s)		19.0	19.2	29.8	18.3		11.8	15.0			23.7	
Level of Service		B	B	C	B		B	B			C	
Approach Delay (s)		19.1			21.2			14.4			23.7	
Approach LOS		B			C			B			C	

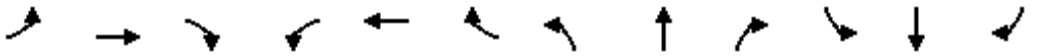
Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	221	298	6	596	482	246	203	356
v/c Ratio	0.87	0.22	0.02	0.45	0.70	0.43	0.93	0.56
Control Delay	61.2	17.4	18.2	14.7	14.7	3.5	69.3	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.2	17.4	18.2	14.7	14.7	3.5	69.3	25.7
Queue Length 50th (ft)	96	46	1	102	196	23	108	162
Queue Length 95th (ft)	#283	97	m3	m164	m115	m19	m#166	194
Internal Link Dist (ft)		1060		662	767			1055
Turn Bay Length (ft)	85		70			30		
Base Capacity (vph)	253	1336	376	1334	967	762	308	902
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.22	0.02	0.45	0.50	0.32	0.66	0.39

Intersection Summary

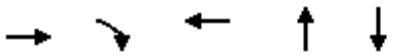
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	288	10	6	342	254	10	472	246	203	333	23
Future Volume (vph)	221	288	10	6	342	254	10	472	246	203	333	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	10	10	9	10	10	12	11	8	10	9	12
Total Lost time (s)	6.0	6.0		6.0	6.0			7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.96			1.00	0.96	1.00	1.00	
Flpb, ped/bikes	0.97	1.00		0.97	1.00			1.00	1.00	0.99	1.00	
Frt	1.00	0.99		1.00	0.94			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1464	3097		1459	2797			1698	1238	1538	1565	
Flt Permitted	0.38	1.00		0.57	1.00			0.99	1.00	0.33	1.00	
Satd. Flow (perm)	589	3097		875	2797			1683	1238	538	1565	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	221	288	10	6	342	254	10	472	246	203	333	23
RTOR Reduction (vph)	0	2	0	0	130	0	0	0	71	0	4	0
Lane Group Flow (vph)	221	296	0	6	466	0	0	482	175	203	352	0
Confl. Peds. (#/hr)	35		24	24		35	22		39	39		22
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Bus Blockages (#/hr)	0	0	0	0	3	3	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)	34.5	34.5		34.5	34.5			32.5	32.5	32.5	32.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			32.5	32.5	32.5	32.5	
Actuated g/C Ratio	0.43	0.43		0.43	0.43			0.41	0.41	0.41	0.41	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0	7.0	7.0	7.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	254	1335		377	1206			683	502	218	635	
v/s Ratio Prot		0.10			0.17						0.22	
v/s Ratio Perm	c0.38			0.01				0.29	0.14	c0.38		
v/c Ratio	0.87	0.22		0.02	0.39			0.71	0.35	0.93	0.55	
Uniform Delay, d1	20.7	14.3		13.0	15.5			19.8	16.4	22.7	18.2	
Progression Factor	1.00	1.00		0.93	1.20			0.77	0.49	1.37	1.40	
Incremental Delay, d2	31.0	0.4		0.0	0.5			0.2	0.0	36.5	0.5	
Delay (s)	51.7	14.7		12.2	19.1			15.5	8.1	67.6	26.0	
Level of Service	D	B		B	B			B	A	E	C	
Approach Delay (s)		30.5			19.1			13.0			41.1	
Approach LOS		C			B			B			D	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

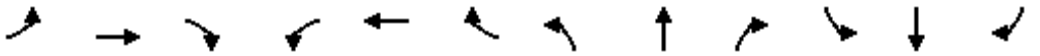


Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	1168	233	196	738	348
v/c Ratio	1.09	0.42	0.30	1.18	0.87
Control Delay	81.7	13.8	12.7	120.4	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	81.7	13.8	12.7	120.4	46.5
Queue Length 50th (ft)	~351	49	19	~449	192
Queue Length 95th (ft)	#475	109	36	#661	#312
Internal Link Dist (ft)	626		694	1383	767
Turn Bay Length (ft)		55			
Base Capacity (vph)	1071	553	656	626	400
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.09	0.42	0.30	1.18	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	1030	233	84	61	51	124	539	75	125	223	0
Future Volume (vph)	138	1030	233	84	61	51	124	539	75	125	223	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	10	9	10	8	12	10	10	12	11	12
Grade (%)		0%			1%			1%			3%	
Total Lost time (s)		6.5	6.5		6.5			7.0			7.0	
Lane Util. Factor		0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.94		0.99			1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.96			0.99			1.00	
Flt Protected		0.99	1.00		0.98			0.99			0.98	
Satd. Flow (prot)		3204	1310		2886			1593			1643	
Flt Permitted		0.87	1.00		0.56			0.86			0.53	
Satd. Flow (perm)		2810	1310		1640			1382			890	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	138	1030	233	84	61	51	124	539	75	125	223	0
RTOR Reduction (vph)	0	0	54	0	32	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1168	179	0	164	0	0	733	0	0	348	0
Confl. Peds. (#/hr)	14		22	22		14	7		18	18		7
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		30.5	30.5		30.5			36.0			36.0	
Effective Green, g (s)		30.5	30.5		30.5			36.0			36.0	
Actuated g/C Ratio		0.38	0.38		0.38			0.45			0.45	
Clearance Time (s)		6.5	6.5		6.5			7.0			7.0	
Vehicle Extension (s)		0.2	0.2		2.0			0.2			0.2	
Lane Grp Cap (vph)		1071	499		625			621			400	
v/s Ratio Prot												
v/s Ratio Perm		c0.42	0.14		0.10			c0.53			0.39	
v/c Ratio		1.09	0.36		0.26			1.18			0.87	
Uniform Delay, d1		24.8	17.7		17.0			22.0			19.9	
Progression Factor		1.00	1.00		0.89			1.00			1.15	
Incremental Delay, d2		55.5	0.2		1.0			97.1			20.9	
Delay (s)		80.3	17.9		16.2			119.1			43.7	
Level of Service		F	B		B			F			D	
Approach Delay (s)		69.9			16.2			119.1			43.7	
Approach LOS		E			B			F			D	

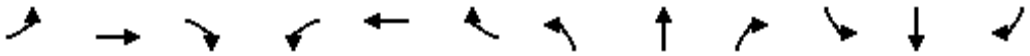
Intersection Summary			
HCM 2000 Control Delay	76.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	442	234	166	286
v/c Ratio	0.65	0.26	0.39	0.94
Control Delay	15.8	6.6	22.1	66.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.8	6.6	22.1	66.2
Queue Length 50th (ft)	124	80	53	114
Queue Length 95th (ft)	232	105	105	#260
Internal Link Dist (ft)	262	445	33	1383
Turn Bay Length (ft)				
Base Capacity (vph)	677	895	443	316
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.26	0.37	0.91

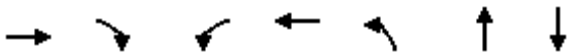
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	250	0	5	108	121	0	122	44	140	51	95
Future Volume (vph)	192	250	0	5	108	121	0	122	44	140	51	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	12	10	12	12	13	12
Grade (%)		-2%			2%			0%			3%	
Total Lost time (s)		5.5			5.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			0.97			0.98			0.99	
Flpb, ped/bikes		0.99			1.00			1.00			0.99	
Frt		1.00			0.93			0.96			0.96	
Flt Protected		0.98			1.00			1.00			0.98	
Satd. Flow (prot)		1441			1409			1558			1460	
Flt Permitted		0.76			0.99			1.00			0.72	
Satd. Flow (perm)		1118			1399			1558			1072	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	192	250	0	5	108	121	0	122	44	140	51	95
RTOR Reduction (vph)	0	0	0	0	48	0	0	18	0	0	24	0
Lane Group Flow (vph)	0	442	0	0	186	0	0	148	0	0	262	0
Confl. Peds. (#/hr)	20		10	10		20	10		18	18		10
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Parking (#/hr)	0	0	0	0	0	0				0	0	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		45.5			45.5			19.5			19.5	
Effective Green, g (s)		45.5			45.5			19.5			19.5	
Actuated g/C Ratio		0.61			0.61			0.26			0.26	
Clearance Time (s)		5.5			5.5			4.5			4.5	
Vehicle Extension (s)		0.2			0.2			2.0			2.0	
Lane Grp Cap (vph)		678			848			405			278	
v/s Ratio Prot								0.10				
v/s Ratio Perm		c0.40			0.13						c0.24	
v/c Ratio		0.65			0.22			0.37			0.94	
Uniform Delay, d1		9.6			6.7			22.7			27.2	
Progression Factor		1.00			1.74			1.00			1.00	
Incremental Delay, d2		4.8			0.6			0.2			37.9	
Delay (s)		14.4			12.2			22.9			65.1	
Level of Service		B			B			C			E	
Approach Delay (s)		14.4			12.2			22.9			65.1	
Approach LOS		B			B			C			E	

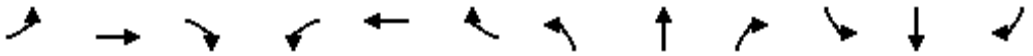
Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	346	283	68	397	93	466	588
v/c Ratio	0.49	0.72	0.28	0.64	0.29	0.59	1.03
Control Delay	20.8	15.1	23.3	25.9	13.4	15.8	68.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	15.1	23.3	25.9	13.4	15.8	68.3
Queue Length 50th (ft)	124	11	33	198	29	145	222
Queue Length 95th (ft)	159	89	m48	m220	m43	m226	#515
Internal Link Dist (ft)	676			644		1055	464
Turn Bay Length (ft)		80	45		95		
Base Capacity (vph)	904	439	239	784	318	790	570
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.64	0.28	0.51	0.29	0.59	1.03

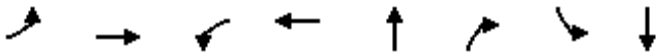
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	346	283	68	251	146	93	284	182	172	318	98
Future Volume (vph)	0	346	283	68	251	146	93	284	182	172	318	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	16	12	9	12	12	9	10	10	12	15	10
Total Lost time (s)		6.0	6.0	6.0	6.0		6.5	6.5			6.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes		1.00	0.47	1.00	1.00		1.00	1.00			0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		0.97	1.00			1.00	
Frt		1.00	0.85	1.00	0.94		1.00	0.94			0.98	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)		2111	696	1593	1760		1455	1580			1861	
Flt Permitted		1.00	1.00	0.43	1.00		0.42	1.00			0.61	
Satd. Flow (perm)		2111	696	722	1760		649	1580			1148	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	346	283	68	251	146	93	284	182	172	318	98
RTOR Reduction (vph)	0	0	165	0	35	0	0	17	0	0	9	0
Lane Group Flow (vph)	0	346	118	68	362	0	93	449	0	0	579	0
Confl. Peds. (#/hr)	36		376				65					65
Heavy Vehicles (%)	8%	2%	8%	2%	2%	2%	8%	8%	2%	2%	8%	8%
Turn Type		NA	Perm	custom	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases			4	7			2			2		
Actuated Green, G (s)		23.2	23.2	23.2	23.2		34.3	34.3			34.3	
Effective Green, g (s)		23.2	23.2	23.2	23.2		34.3	34.3			34.3	
Actuated g/C Ratio		0.33	0.33	0.33	0.33		0.49	0.49			0.49	
Clearance Time (s)		6.0	6.0	6.0	6.0		6.5	6.5			6.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		0.2	0.2			0.2	
Lane Grp Cap (vph)		699	230	239	583		318	774			562	
v/s Ratio Prot		0.16			c0.21			0.28				
v/s Ratio Perm			0.17	0.09			0.14				c0.50	
v/c Ratio		0.49	0.51	0.28	0.62		0.29	0.58			1.03	
Uniform Delay, d1		18.7	18.8	17.3	19.7		10.6	12.7			17.9	
Progression Factor		1.00	1.00	1.22	1.25		0.96	1.06			1.00	
Incremental Delay, d2		0.2	0.8	0.2	1.5		1.6	2.2			46.1	
Delay (s)		18.9	19.6	21.4	26.0		11.9	15.6			64.0	
Level of Service		B	B	C	C		B	B			E	
Approach Delay (s)		19.2			25.3			15.0			64.0	
Approach LOS		B			C			B			E	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



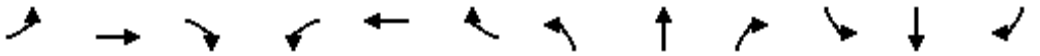
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	108	842	34	1184	180	5	238	594
v/c Ratio	1.08	0.57	0.18	0.82	0.26	0.01	0.59	0.95
Control Delay	149.4	26.0	4.6	7.0	28.1	0.0	36.0	58.9
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	149.4	26.0	4.6	7.4	28.1	0.0	36.0	58.9
Queue Length 50th (ft)	~109	269	6	91	106	0	156	492
Queue Length 95th (ft)	#238	334	m7	m99	164	0	m211	m#648
Internal Link Dist (ft)		1060		662	767			1055
Turn Bay Length (ft)	85		70			30		
Base Capacity (vph)	100	1482	193	1436	704	513	403	622
Starvation Cap Reductn	0	0	0	43	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	0.57	0.18	0.85	0.26	0.01	0.59	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

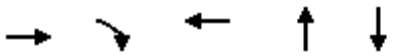
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	692	150	34	839	345	0	180	5	238	356	238
Future Volume (vph)	108	692	150	34	839	345	0	180	5	238	356	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	10	10	9	10	10	12	11	8	10	9	12
Total Lost time (s)	6.0	6.0		6.0	6.0			7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.96			1.00	0.93	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00	1.00	0.96	1.00	
Frt	1.00	0.97		1.00	0.96			1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	2983		1482	2849			1701	1206	1491	1462	
Flt Permitted	0.13	1.00		0.25	1.00			1.00	1.00	0.62	1.00	
Satd. Flow (perm)	205	2983		393	2849			1701	1206	974	1462	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	692	150	34	839	345	0	180	5	238	356	238
RTOR Reduction (vph)	0	13	0	0	32	0	0	0	3	0	17	0
Lane Group Flow (vph)	108	829	0	34	1152	0	0	180	2	238	577	0
Confl. Peds. (#/hr)	35		24	24		35	22		39	39		22
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Bus Blockages (#/hr)	0	0	0	0	3	3	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)	69.0	69.0		69.0	69.0			58.0	58.0	58.0	58.0	
Effective Green, g (s)	69.0	69.0		69.0	69.0			58.0	58.0	58.0	58.0	
Actuated g/C Ratio	0.49	0.49		0.49	0.49			0.41	0.41	0.41	0.41	
Clearance Time (s)	6.0	6.0		6.0	6.0			7.0	7.0	7.0	7.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	101	1470		193	1404			704	499	403	605	
v/s Ratio Prot		0.28			0.40			0.11			c0.39	
v/s Ratio Perm	c0.53			0.09					0.00	0.24		
v/c Ratio	1.07	0.56		0.18	0.82			0.26	0.00	0.59	0.95	
Uniform Delay, d1	35.5	24.9		19.7	30.2			26.9	24.1	31.8	39.7	
Progression Factor	1.00	1.00		0.18	0.16			1.00	1.00	0.95	0.95	
Incremental Delay, d2	109.5	1.6		0.8	2.2			0.9	0.0	4.8	22.6	
Delay (s)	145.0	26.5		4.3	7.2			27.7	24.1	34.9	60.5	
Level of Service	F	C		A	A			C	C	C	E	
Approach Delay (s)		40.0			7.1			27.6			53.2	
Approach LOS		D			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	120.2%	ICU Level of Service	H
Analysis Period (min)	15		

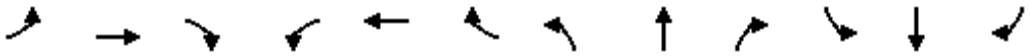
c Critical Lane Group



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	519	438	418	305	540
v/c Ratio	0.64	0.77	0.83	0.89	0.73
Control Delay	29.8	18.5	42.2	45.6	31.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	18.5	42.2	45.6	31.7
Queue Length 50th (ft)	115	44	96	108	144
Queue Length 95th (ft)	166	#198	#173	#281	#528
Internal Link Dist (ft)	626		694	1383	767
Turn Bay Length (ft)		55			
Base Capacity (vph)	807	567	506	341	742
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.64	0.77	0.83	0.89	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	519	438	115	275	28	95	157	53	0	527	13
Future Volume (vph)	0	519	438	115	275	28	95	157	53	0	527	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	10	9	10	8	12	10	10	12	11	12
Grade (%)		0%			1%			1%			3%	
Total Lost time (s)		7.0	7.0		7.0			6.5			6.0	
Lane Util. Factor		0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes		1.00	0.93		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		0.99			1.00			1.00	
Frt		1.00	0.85		0.99			0.98			1.00	
Flt Protected		1.00	1.00		0.99			0.98			1.00	
Satd. Flow (prot)		3231	1296		3003			1562			1669	
Flt Permitted		1.00	1.00		0.66			0.37			1.00	
Satd. Flow (perm)		3231	1296		1997			579			1669	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	519	438	115	275	28	95	157	53	0	527	13
RTOR Reduction (vph)	0	0	243	0	7	0	0	10	0	0	1	0
Lane Group Flow (vph)	0	519	195	0	411	0	0	295	0	0	539	0
Confl. Peds. (#/hr)	14		22	22		14	7		18	18		7
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Turn Type		NA	Perm	Perm	NA		custom	NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			5			6		
Actuated Green, G (s)		19.0	19.0		19.0			43.5			29.9	
Effective Green, g (s)		19.0	19.0		19.0			43.5			29.9	
Actuated g/C Ratio		0.25	0.25		0.25			0.57			0.39	
Clearance Time (s)		7.0	7.0		7.0			6.5			6.0	
Vehicle Extension (s)		2.0	2.0		2.0			0.2			3.0	
Lane Grp Cap (vph)		807	324		499			331			656	
v/s Ratio Prot		0.16									0.32	
v/s Ratio Perm			0.15		c0.21			c0.51				
v/c Ratio		0.64	0.60		0.82			0.89			0.82	
Uniform Delay, d1		25.5	25.2		26.9			14.2			20.7	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		3.9	8.0		14.3			28.3			11.1	
Delay (s)		29.4	33.2		41.2			42.5			31.8	
Level of Service		C	C		D			D			C	
Approach Delay (s)		31.1			41.2			42.5			31.8	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	76.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

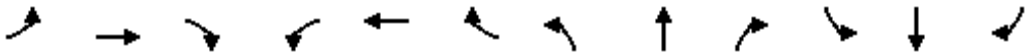
c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	262	584	20	812
v/c Ratio	0.62	1.04	0.03	1.31
Control Delay	25.8	69.9	6.3	173.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.8	69.9	6.3	173.0
Queue Length 50th (ft)	90	~443	2	~463
Queue Length 95th (ft)	167	#582	12	#672
Internal Link Dist (ft)	262	445	33	1383
Turn Bay Length (ft)				
Base Capacity (vph)	426	561	724	619
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	1.04	0.03	1.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	214	0	7	488	89	0	8	12	489	233	90
Future Volume (vph)	48	214	0	7	488	89	0	8	12	489	233	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	12	10	12	12	13	12
Grade (%)		-2%			2%			0%			3%	
Total Lost time (s)		5.5			5.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			0.99			0.97			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			0.98	
Frt		1.00			0.98			0.92			0.99	
Flt Protected		0.99			1.00			1.00			0.97	
Satd. Flow (prot)		1476			1520			1458			1501	
Flt Permitted		0.79			1.00			1.00			0.80	
Satd. Flow (perm)		1171			1515			1458			1243	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	48	214	0	7	488	89	0	8	12	489	233	90
RTOR Reduction (vph)	0	0	0	0	10	0	0	6	0	0	7	0
Lane Group Flow (vph)	0	262	0	0	574	0	0	14	0	0	805	0
Confl. Peds. (#/hr)	20		10	10		20	10		18	18		10
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Parking (#/hr)	0	0	0	0	0	0				0	0	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		25.5			25.5			34.5			34.5	
Effective Green, g (s)		25.5			25.5			34.5			34.5	
Actuated g/C Ratio		0.36			0.36			0.49			0.49	
Clearance Time (s)		5.5			5.5			4.5			4.5	
Vehicle Extension (s)		0.2			0.2			2.0			2.0	
Lane Grp Cap (vph)		426			551			718			612	
v/s Ratio Prot								0.01				
v/s Ratio Perm		0.22			c0.38						c0.65	
v/c Ratio		0.62			1.04			0.02			1.32	
Uniform Delay, d1		18.2			22.2			9.1			17.8	
Progression Factor		1.00			0.95			1.00			1.00	
Incremental Delay, d2		6.5			47.7			0.0			153.6	
Delay (s)		24.7			68.9			9.1			171.3	
Level of Service		C			E			A			F	
Approach Delay (s)		24.7			68.9			9.1			171.3	
Approach LOS		C			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	110.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			